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Government of Bombay
Public Works Department

Irrigation Administration Report

Province of Bombay

Part I

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MAP OF THE PROVINCE OF BOMBAY

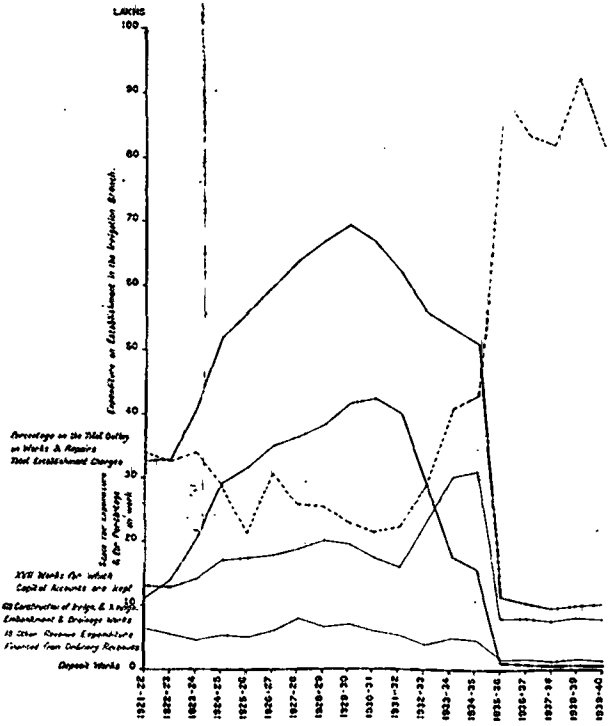
TO ACCOMPANY THE IRRIGATION ADMINISTRATION REPORT FOR 1938-40

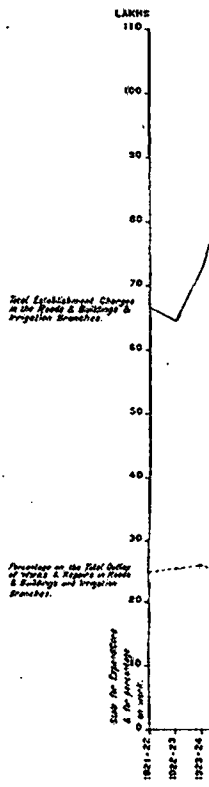
SCALE 40 MILES TO 1 INCH

INDIAN STATES
INDIAN STATES
INDIAN STATES

PROVINCE OF BOMBAY
DIAGRAM SHOWING EXPENDITURE
ON ESTABLISHMENT
IN THE
ROADS & BUILDINGS & IRRIGATION BRANCHES
OF THE
PUBLIC WORKS DEPARTMENT
AND
PERCENTAGE TO THE TOTAL OUTLAY ON WORKS AND REPAIRS.

NOTE:— THE FIGURES UP TO 1934-35 PERTAIN TO BOTH THE PROVINCES OF BOMBAY AND SIND.

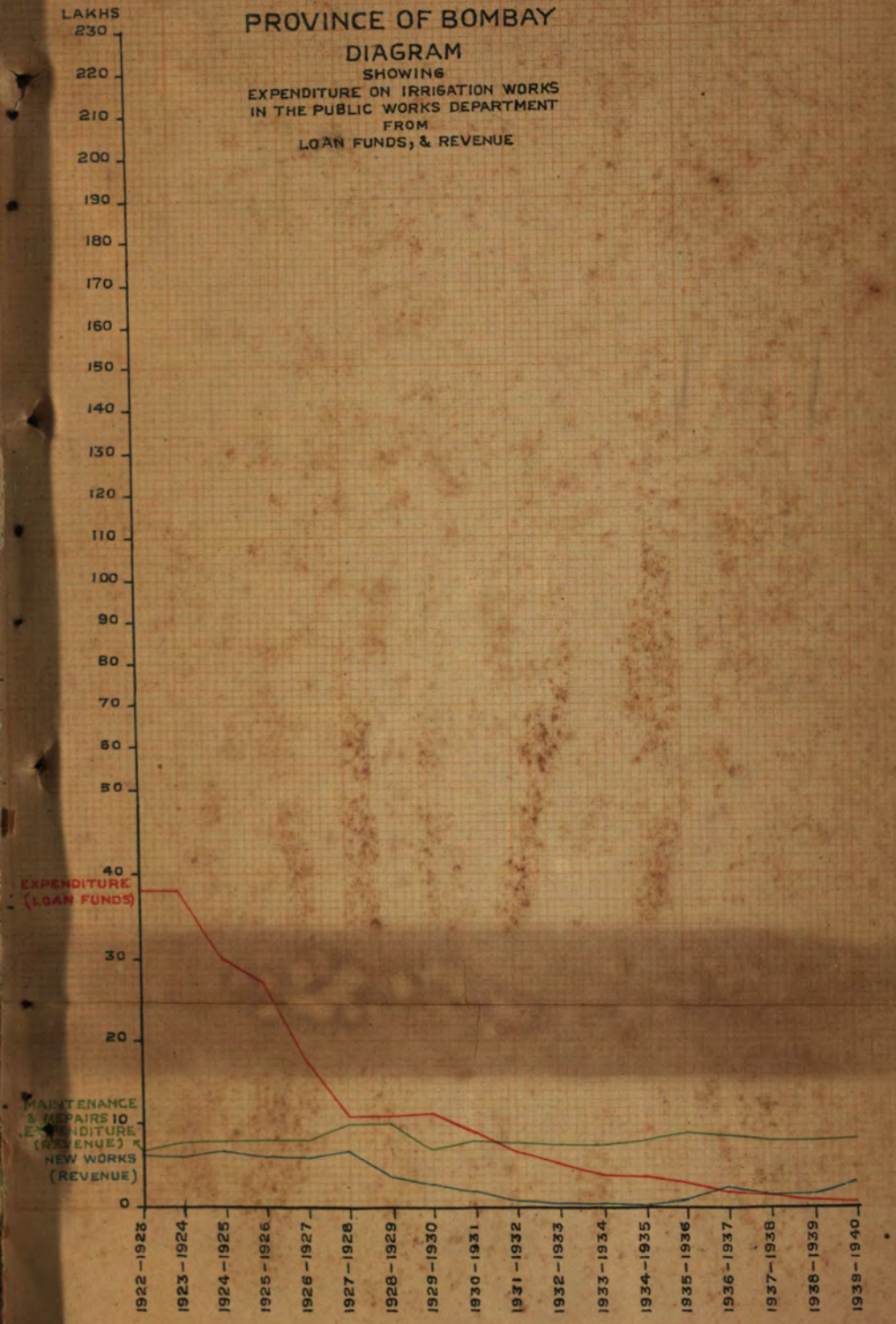




PROVINCE OF BOMBAY

DIAGRAM

SHOWING
EXPENDITURE ON IRRIGATION WORKS
IN THE PUBLIC WORKS DEPARTMENT
FROM
LOAN FUNDS, & REVENUE



G.P.Z.O. POONA, 1940.

IRRIGATION ADMINISTRATION REPORT, PROVINCE OF BOMBAY, PART I 1939-40.

PHYSICAL FEATURES—GENERAL DESCRIPTION OF IRRIGATION.

The area under irrigation in the Province of Bombay is not compact. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part of the Province and in Gujarat, and of about 400 bandharas in Nasik and Khandesh Districts. The tanks have earthen dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificient irrigation works, which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficient purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles ; precipitous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts ; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers, which reach the sea on the south-eastern coast of the peninsula. These rivers are in flow during the

monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea benefiting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements; and at a point on the river, which may be as far as 50 miles from the main storage lake, a "pick-up-weir" is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley; as a rule each canal only irrigates the area between itself and the river.

SECTION I.

COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation.

4. The following list includes all the works in operation (43 in number) :—

Serial number	Name of Work	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks
		Acres			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasai reservoir, completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of the Khari is undulating ground at its source and then plain ground with cultivated fields. The supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasai reservoir.
2	Wangroli Tank ..	3,400	Do. ..	Completed ..	The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
4	Saiat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
5	Tranza Nagrama Tanks.	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama has a catchment of 1·59 sq. miles Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futelao Tank ..	800	Do. ..	Do. ..	Hilly catchment.
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable ..	Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal	180,000	Do. ..	Do. ..	Do.
9	Mutha Canals including Matoba Tank.	49,000	Do. ..	Lake Fife : completed.	Do.
10	Kasurdi Tank ..	40	Dependent on local rain.	Completed ..	Deccan catchment.

Serial number	Name of Work	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks
		Acres			
11	Shirsuphal Tank ..	1,150	Dependent on local rain.	Completed ..	Deccan catchment.
12	Bhadalvadi Tank ..	1,123	Do. ..	Do. ..	Do.
13	Godavari Right Bank Canal.	44,000	Reliable ..	Lake Beale: completed.	Ghat catchment.
	Godavari Left Bank Canal.	26,000			
14	Girna Canal ..	9,000	Do. ..	Chankapur Tank completed.	Do.
15	Kadwa River Works — Palkhed Canal. Ojhar Tambat Canal. Wadali Canal.	7,689	Do. ..	Waghad Tank completed.	Do.
16	Pravara Right Bank Canal.	18,480	Do.	Lake Arthur Hill (Wilson Dam) completed.	Do.
	Pravara Left Bank Canal.	64,080			
17	Bhatodi Tank ..	1,461	Dependent on local rain.	Completed ..	Deccan catchment.
18	Ekruk Tank ..	13,070	Do. ..	Do. ..	Do.
19	Mhaswad Tank ..	14,000	Do. ..	Do. ..	Do.
20	Koregaon Tank ..	416	Do. ..	Do. ..	Hilly catchment.
21	Ashti Tank ..	3,382	Do. ..	Do. ..	Deccan catchment.
22	Pathri Tank ..	3,094	Do. ..	Do. ..	Hilly catchment.
23	Jamda Canals ..	42,000	Girna river supply not reliable.	Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
24	Hartala Tank ..	978	Dependent on local rain.	Completed ..	Deccan catchment.
25	Mhaswa Tank ..	3,256	Do. ..	Do. ..	Do.
26	Shahada Channel ..	2,000	Reliable ..	No storage work ..	Hilly catchment. Supply is perennial.
27	Lower Panjhra River Works.	8,173	Panjhra river supply not reliable.	Mukhi Tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
28	Krishna Canal ..	6,412	Reliable ..	Proposed ..	Ghat catchment.
29	Rewari Canal ..	439	Dependent on local rain.	No storage work ..	Deccan catchment.

Serial No.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
30	Upper Man River Works.	373	Dependent on local rain.	Pingli Tank completed.	Deccan catchment.
31	Yerla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
32	Chikhli Canal ..	358	Do. ..	No storage work ..	Do.
33	Maini Tank ..	455	Do. ..	Completed ..	Do.
34	Parsul Tank ..	1,440	Do. ..	Do. ..	Do.
35	Gadikeri Tank ..	416	Do. ..	Do. ..	Do.
36	Gokak Canal ..	17,627	Reliable ..	27' completed ..	Ghat catchment.
37	Muchkundi Tank ..	750	Dependent on local rain.	Completed ..	Deccan catchment.
38	Dambal Tank ..	531	Do. ..	Do. ..	Do.
39	Medleri Tank ..	231	Do. ..	Do. ..	Do.
40	Madag Tank ..	1,418	Do. ..	Do. ..	Ghat and Forest catchment.
41	Asundi Tank ..	503	Do. ..	Do. ..	Deccan catchment.
42	Dharma Canal ..	For monsoon season 12,870 acres. For rabi nil.	Do. ..	No storage work. The canal takes off from the river itself.	Forest catchment.
43	Mavinkop Tank ..	617	Do. ..	Completed ..	Do.

Ekruk tank, Gadikeri tank, Mavinkop tank and Shahada channel are the only productive works and the rest are unproductive.

5. The interest account for the year was as follows :—

——	Productive Works.	Unproductive Works.	Total.
	Rs.	Rs.	Rs.
Total interest charges during 1939-40 ..	46,361	41,23,083	41,69,444
Net revenue realised during 1939-40 ..	1,46,210	17,85,392	19,31,602

Net loss, i.e., difference between interest and net revenue—Rs. 22,37,842.

6. The financial results of the year by main heads were as under :—

—	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	7,634	1,67,287	9,872	1,77,159	30,949	1,46,210
Unproductive	297,255	31,98,153	11,629	32,09,782	14,24,390	17,85,392
Total ..	304,889*	33,65,440	21,501	33,86,941	14,55,339	19,31,602

*Inclusive of 12,324 acres under consolidated assessment.

The gross revenue and the net revenue show increases of Rs. 1,80,019 and Rs. 4,04,875, respectively, as compared with the figures for the previous year.

Area irrigated, revenue, etc.

7. The figures of the area irrigated, the revenue assessed and realised and the working expenses, as compared with those of the previous three years, are given below :—

Year.	Area irrigated†	Revenue.		Working expenses.
		Assessment.	Realisations.	
	Acres.	Rs.	Rs.	Rs.
1936-37	313,973	34,77,222	30,66,641	17,29,930
1937-38	320,006	33,83,235	32,35,895	16,26,519
1938-39	270,650	31,17,788	32,06,922	16,80,195
Average ..	301,543	33,26,082	31,69,819	16,78,881
1939-40	304,889	40,39,667	33,86,941	14,55,339

†Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,764,000 acres. The area irrigable at present is 726,000 acres.

9. The state of Revenue collections was as follows :—

		Rs.
Balance of demands unrealised at the commencent of the year		18,22,618
Demands of the year—	Rs.	
Rabi, 1938-39 ..	5,31,512	
Kharif, 1939-40 ..	25,71,088	
Miscellaneous receipts ..	5,74,032	
		36,76,632
Total ..		54,99,250
Deduct—		
Remissions		27,832
Net total ..		54,71,418
Amount unrealised at the close of the year ..		20,98,172
	Rs.	
Actual receipts of the year ..	33,73,246	
Add—		
Share of land revenue	21,501	
		33,94,747
Deduct—		
Refunds of revenue		7,806
Revenue realised		33,86,941

The remissions and refunds together amounted to Rs. 35,638.

Unrealised irrigation revenue at the close of the year amounted to Rs. 20,98,172 which is made up as follows :—

	Rs.
Ekruk Tank	12,987
Hathmati and Khari Cut Canals	10,133
Bhadalvadi Tank	6,441
Krishna Canal	88,800
Ashti Tank	7,613
Lower Panjhra River Works	6,321
Yerla River Irrigation Works	6,411
Parsul Tank	7,545
Mutha Canals and Matoba Tank	2,26,734
Gokak Canal	24,133
Mhaswad Tank	40,673
Jamda Canals	9,134
Nira Left Bank Canal and Shetpal Tank ..	3,93,178
Chankapur Tank—Girna Canal	1,10,915
Kadwa River Works	93,040
Godavari Canals	2,32,903
Nira Right Bank Canal	3,18,759
Pravara River Works	4,79,673
Other Works	22,779
Total ..	20,98,172

Working expenses.

10. The working expenses of the year amounted to Rs. 14,55,339 as compared with Rs. 16,80,195 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

——	1936-37	1937-38	1938-39	1939-40
	Rs.	Rs.	Rs.	Rs.
Works	1,85,616	1,44,956	1,37,680	11,949
Repairs	5,93,823	5,80,762	5,78,687	5,91,355
Establishment	8,68,902	8,14,161	8,69,198	7,64,259
Tools and Plant	8,805	7,914	10,327	6,710
Total in the Public Works Department ..	16,57,146	15,47,793	15,95,892	13,74,273
Collection charges	64,992	71,472	77,144	75,037
Indirect charges	7,792	7,254	7,159	6,029
Total working expenses ..	17,29,930	16,26,519	16,80,195	14,55,339

Details of working expenses.

11. The following table gives the details of working expenses for some of the principal works :—

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the Public Works Department.	
		Total cost.	Per acre.	Per mile of canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank.	10·29	48,711	0 0 5	878	2·90
Pravara Canals	14·77	1,887	0 1 1	1,086	4·96
Girna Canal	9·96	446	0 0 8	1,772	6·89
Godavari Canals	16·28	1,851	0 0 10	1,119	6·95
Mutha Canals and Matoba Tank ..	10·84	1,031	0 1 1	572	6·08
Kadwa River Works	8·92	198	0 0 9	819	7·53
Nira Right Bank Canal	13·39	45,109	0 0 5	527	5·19
Krishna Canal	10·96	561	0 2 1	772	6·37
Yerla River Irrigation Works ..	4·47	362	0 1 8	319	3·11
Upper Man River Works	4·37	81	0 1 5	700	13·18
Maini Tank	4·18	53	0 0 9	448	3·60
Jamda Canals	5·87	71	0 0 8	214	13·75
Ekruk Tank	5·84	337	0 1 3	485	5·05
Ashti Tank	3·15	106	0 0 7	389	3·49
Mhaswad Tank	4·37	73	0 0 8	810	10·21
Gokak Canal	4·82	634	0 1 0	364	1·89
Dharma Canal	5·64	218	0 8 3	253·11	·75
Dambal Tank	5·94	..	..	152·29	1·44
Medleri Tank	8·44	..	..	120·74	21·28
Madag Tank	4·49	..	..	452·33	10·88
Asundi Tank	5·54	..	..	160·70	2·15
Hathmati and Khari Cut Canals ..	1·31	No separate establishment was maintained		661	30·16

Gross assessed revenue.

12. The gross assessed revenue, direct and indirect, amounted to Rs. 40,39,667 as compared with Rs. 31,17,788 in the previous year. The details of the gross assessment are as under :—

—	Direct revenue.			Indirect revenue.	Total.
	Water rate.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	32,864	1,33,236	1,66,100	9,872	1,75,972
Unproductive	34,11,270	4,40,796	38,52,066	11,629	38,63,695
Total ..	34,44,134	5,74,032	40,18,166	21,501	40,39,667

The net assessed revenue of the year, after deducting working expenses (Rs. 14,55,339), amounted to Rs. 25,84,328 as compared with Rs. 14,37,593 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

—	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net Revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank ..	13,40,386	1,62,239	23,261	1,38,978	10·37
Hathmati and Khari Cut Canals	13,18,729	10,688	34,412	—23,724	..
Nira Left Bank Canal and Shetphal Tank ..	1,46,16,437	7,53,972	2,16,117	5,37,855	3·68
Nira Right Bank Canal ..	4,12,25,605	5,81,176	2,36,625	3,45,141	0·82
Mutha Canals and Matoba Tank	70,22,750	3,39,675	98,522	2,41,153	3·43
Godavari Canals ..	1,06,02,961	4,68,642	2,61,927	2,06,715	1·95
Ghankapur Tank—Girna Canal	20,56,431	73,377	70,892	2,485	0·12
Kadwa River Works ..	10,35,876	31,354	31,117	237	0·02
Pravara River Works ..	1,51,04,972	6,70,295	2,85,667	3,84,628	2·55
Whaswad Tank ..	20,96,016	42,504	20,210	22,294	1·06
Lower Panjhra River Works	4,68,621	24,867	4,481	20,386	4·35
Krishna Canal ..	9,49,807	28,209	27,214	995	0·10
Gokak Canal	14,72,174	64,435	18,845	45,590	3·10

14. The average water rates per acre of land actually irrigated were :—

	Rs.
Productive works	5·02
Unproductive works	11·55

15. The water rate assessments and other receipts compare with those of the previous year as under :—

	1938-39.	1939-40.
	Rs.	Rs.
Water rates	26,52,314	34,44,134
Other receipts—		
Plantations	5,168	7,388
Water power	14,313	15,145
Miscellaneous	4,20,815	5,51,499
Total ..	4,40,296	5,74,032
Share of land revenue	25,178	21,501
Grand Total ..	31,17,788	40,39,667

16. The principal crop acreages irrigated during 1938-39 and 1939-40 are given below :—

Crop acreages.

	1938-39.	1939-40.
Crop acreages.	Acres.	Acres.
Garden and orchards	7,012	7,865
Sugarcane	43,571	63,450
Wheat	9,956	11,424
Rice	8,397	4,073
Jowar	51,740	65,750
Bajri	12,364	11,644
Gram, etc.	14,518	11,465
Groundnut	19,926	14,465
Cotton	19,223	12,943
Condiments	9,297	7,217

The total estimated value of the crops irrigated was Rs. 396·14 lakhs as compared with Rs. 265·88 lakhs during the previous year.

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

The year under review was marked by a poor monsoon which broke in the second week of June and ended by the middle of September. The rainfall was below normal and of low intensify with the result that it was inadequate for rice crops and for storage. There was very little run-off from the catchments of the rivers. The little flow in the Hathmati River was utilised in filling up the reservoirs and tanks and for rice transplantation. The transplanted area could not be protected fully by canal water. The total area protected by irrigation under the Hathmati and Khari Cut Canals including the area in the Kalambandhi villages of the Khari sluices system was about 6,062 acres.

The rainfall gauged at Ahmedabad and at Prantij was 19·89 and 17·47 inches, respectively, as compared with 27·37 and 25·65 inches, the average precipitation, respectively, of the last three years. Similarly at Bareja, which is situated in the centre of the area irrigated by the Khari Cut Canal, the rainfall was 20·10 inches as compared with 24·56 inches, the average of the last three years. At Himatnagar, where the Head Works of the Hathmati Canal are situated, it was 19·53 inches as compared with 30·88 inches, the average of the past three years.

The principal irrigation works in operation in this Circle are (1) the Hathmati and Khari Cut Canals, (2) the Wangroli Tank, (3) the Savli Tank, (4) the Saiat Tank, (5) the Tranza-Nagrama Tanks and (6) the Futelao Tank.

No. (1) is a work which includes the Bokh Storage Reservoir with a capacity of 300 million cubic feet of water and several small tanks with small independent catchments depending on local rainfall. The other works are storage tanks all depending on local rainfall.

The six works are financially unproductive, as the annual revenue is not sufficient to cover the working expenses.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

Hathmati and Khari Cut Canals.

This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers and this system in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, first into the Bokh Reservoir and then into the Khari River direct via the Bhujwa Channel. The Bokh Reservoir does not provide any direct irrigational supplies but only acts as a storage reservoir for the Khari Cut Canal. Further downstream on the Khari River are situated two small irrigation systems and these utilise the natural flow of the river and also any surplus water

which can be made available from the Hathmati canal ; the Khari water is abstracted at the so-called " Khari Sluices " for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial cut called " the Khari Cut " into a natural channel and this in its turn supplies a system of distributaries, several small tanks and the large Chandola Tank situated near Ahmedabad. The system was first opened in 1873-74 and has cost more than Rs. 13 lakhs.

The Hathmati River was in flood on three occasions only due to poor rainfall in the catchment of the river. The floods were of short duration and of limited volume. The greatest depth of water over the weir crest was 0·90 feet on 28th August 1939 when the discharge was 3166 cusecs. The area irrigated under this canal was 230 acres in the Kharif season and 67 acres in the Rabi season. The average daily discharge admitted into the canal at its head during the Kharif season was 49 cusecs of which quantity only 6 cusecs were utilised for irrigation carried out under the canal, the balance being let down into the Bokh Reservoir and the Bhujwa Channel for supply to irrigation carried out under the Khari Cut Canal and for filling up the reservoirs and tanks situated thereunder. During the Rabi season an average daily discharge of 6 cusecs was obtained from the river, which was utilised for irrigational purposes as well as for filling tanks for domestic use.

The Khari River rose in flood moderately 5 times during the season. The floods were of short duration and of little volume. The flood waters were dealt with according to the terms of the provisional agreement in force this year. Under this canal 842 acres were irrigated in the Kharif season and 2 in the Rabi season.

The area irrigated, the revenue assessed and the working expenses in connection with the Hathmati and Khari Cut Canals compare with the average of the three preceding years as under :—

Year.	Kharif.		Rabi.		Total.		Working expenses.
	Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Average	7,029	36,703	1,515	4,331	8,544	41,034	38,508
1939-40	1,072	1,369	69	132	1,141	1,501	34,412

The remissions sanctioned during the year amounted to Rs. 1,609. The gross revenue realised from all sources amounted to Rs. 10,608 while the working expenses were Rs. 34,412. These figures show a net loss of 1·80 per cent. on the total capital outlay of Rs. 13,18,729.

First Class Irrigation Tanks in Gujarat.

The five first class tanks, viz. Wangroli, Savli, Saiat, Tranza-Nagrama and Futelao were constructed between the years 1904 and 1917 at the aggregate cost of Rs. 11 lakhs. They rarely yield any net return, as the demand for water from them is small in years of good rainfall, whereas in years of scarcity the tanks themselves store deficient supplies. The first four tanks are situated in Kaira Collectorate, while the last one is in the Broach and Panch Mahals Collectorate.

The area irrigated, the revenue assessed and the working expenses in connectin with the tanks during the year are compared with the average of the preceding three years as below :—

Name of tank.	Year.	Kharif.		Rabi.		Total.		Working expenses.
		Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli.. ..	Average ..	965	4,715	180	722	1,145	5,437	6,629
	1939-40 ..	644	2,157	58	195	702	2,352	6,255
Savli	Average ..	832	4,132	26	99	858	4,231	5,379
	1939-40 ..	730	3,396	..	..	730	3,396	5,016
Saiat	Average ..	405	1,575	45	180	450	1,755	3,241
	1939-40 ..	..	..	..	..	..	..	2,942
Tranza-Nagrama ..	Average ..	1	2	4	8	5	10	1,850
	1939-40 ..	3	8	11	21	14	29	1,759
Futelao	Average ..	19	38	56	170	75	208	4,473
	1939-40 ..	93	218	173	524	266	742	1,964

Wangroli Tank.

The rainfall gauged at the site of the tank was 24·37 inches. The tank was partially filled and the water was utilised in irrigating the Kharif and Rabi crops (mainly rice, wheat, and gram). The miscellaneous revenue realised during the year amounted to Rs. 959 compared with Rs. 1,194 received during the previous year. No remissions were granted during the year.

Savli Tank.

The rainfall gauged at the site of the tank was 20·60 inches. The tank was poorly filled and the water was utilised in irrigating Kharif crops only mainly rice. The miscellaneous revenue realised amounted to Rs. 740 compared with Rs. 624 received during the previous year. No remissions were granted.

Saiat Tank.

The rainfall gauged at the site of the tank was 15·93 inches. The tank was very poorly filled and the little water available was reserved for domestic purposes. The miscellaneous revenue realised amounted to Rs. 686 compared with Rs. 969 received in the previous year. No remissions were granted during the current year.

Tranza-Nagrama Tanks.

The rainfall gauged at Tranza-Nagrama was 17·49 inches. The tanks did not fill during the year and there was practically no irrigation during the year. The miscellaneous revenue realised amounted to Rs. 60 compared with Rs. 531 received in the previous year.

Futelao Tank.

The rainfall gauged at the site of the tank was 22·41 inches during the year. The tank was filled to F. S. L. and some irrigation was done during Kharif and Rabi seasons. Although the supply of water was sufficient, the reason for less irrigation as compared with the storage of water in the tank is that the Bhills in this area are very poor and illiterate to take sufficient advantage of the water available by way of irrigation. The miscellaneous revenue realised amounted to Rs. 102 compared with Rs. 28 received in the previous year. The remaining work of Extensions and improvements on this tank was completed at the cost of Rs. 664.

The percentage returns obtained during the year from the working of these tanks are shown below :—

Name of Tank.	Gross assessment.	Gross realisation.	Less working expenses.	Net revenue.	Capital outlay—direct and indirect—to end of 1939-40.	Percentage of return.
	Rs.	Rs.	Rs.	Rs.	Rs.	
Wangroli	3,311	3,977	6,255	—2,278	2,93,295	..
Savli	4,136	3,904	5,016	—1,112	2,55,210	..
Saiat	686	1,248	2,942	—1,694	1,84,029	..
Tranza-Nagrama ..	89	105	1,759	—1,654	2,80,635	..
Futelao	844	271	1,964	—1,693	1,16,461	..

DECCAN IRRIGATION CIRCLE.

The rainfall during the year under report was unsatisfactory on all the Canals in this Circle.

The general condition of the irrigated crops was satisfactory. There was improvement in the Gul rates during the year under report.

Sugar Factories.

The following ten sugar factories have been established on the Deccan Canals and the acreages for which water is guaranteed at present is noted against each :—

Name of sugar factory.	Annual guarantee of water supply for areas of sugarcane.	Capacity in tons per day.
	Acres.	
1. The Belapur Company, Harigaon, Pravara Left Bank Canal.	3,050	650
2. The Maharashtra Sugar Mills, Limited near Belapur, Pravara Left Bank Canal.	4,250	1,000
3. Messrs. Marsland Price and Company, Limited at Kalamb, Nira Left Bank Canal.	3,500	1,250
4. The Phaltan Sugar Works, Limited near Tadavli, Nira Right Bank Canal.	2,500	500
5. The Saswad Mali Sugar Factory, Limited near Akluj, Nira Right Bank Canal.	1,600	370
6. The Ravalgaon Sugar Farm, Limited near Ravalgaon, Girna Canal.	1,400	450
7. The Brihan Maharashtra Sugar Syndicate, Ltd. on Nira Right Bank Canal.	1,600	450
8. Belwandi Sugar Farm near Visapur, Visapur Canal.	No guarantee in respect of area is given but $\frac{1}{4}$th of the water available in the Visapur tank is guaranteed annually.	250
9. Godavari Sugar Mills, Limited on Godavari Right and Left Bank Canals.	2,850	750
10. Shree Changdeo Sugar Mills, Ltd. on the Godavari Right Bank Canal.	1,000	Sugar factory under erection.

The areas of sugarcane planted by the sugar factories during the year were 22,990 acres.

A number of drainage projects to save lands from damage due to intensive cultivation of sugarcane by Sugar Companies has been prepared and construction work of some of these schemes in various sugar factory areas was in progress during the year.

The total area irrigated in the Deccan Irrigation Circle during the year was 2,47,145 acres as compared with 2,07,904 acres during the previous year and the gross revenue amounted to Rs. 35·07 lakhs as compared with the figure of Rs. 26·36 lakhs for the previous year.

NIRA CANALS DIVISION.

Lloyd Dam at Bhatgar and Nira Right Bank Canal.

The Nira Right Bank Canal is the largest canal in the Deccan. The original estimate of the project framed in 1910 provided for :—

(1) The raising of the Dam at Bhatgar by 60 feet in order to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet ;

(2) The construction of a canal 109 miles long on the right bank of the Nira river having a capacity of 1,500 cusecs at head ; and

(3) The enlarging of the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs.

The total cost was estimated at about Rs. 258 lakhs and the area to be irrigated annually at 190,000 acres. The project was submitted to the Government of India in May 1911, sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before the work of raising the Bhatgar Dam was commenced, however, it was decided for technical reason to build an entirely new dam. Owing to this change and to the unprecedented rise in the cost of labour and materials due to the Great War, a revised estimate amounting to Rs. 491 lakhs was framed in 1920 and submitted to the Government of India in September 1921. The revised project provided for :—

(1) The construction of a new dam at Bhatgar designed to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet ;

(2) The construction of a canal 106½ miles long on the right bank of the Nira river ; and

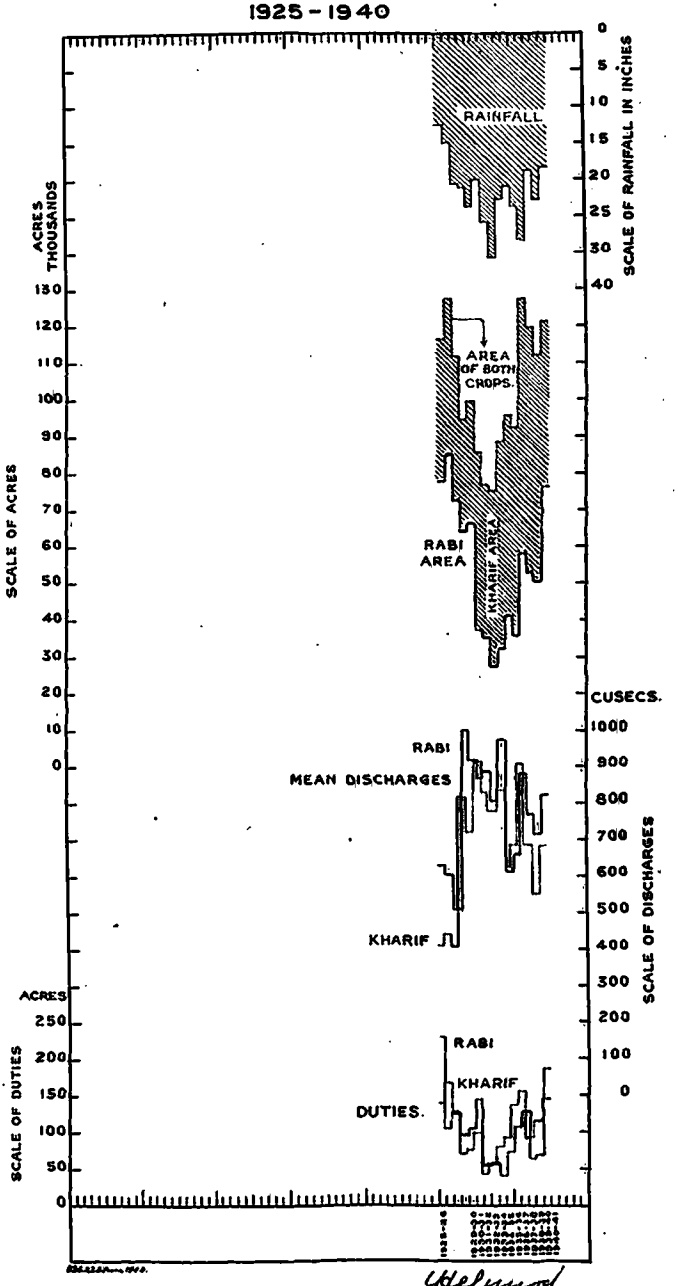
(3) The enlargement of the Nira Left Bank Canal, including the expenditure of Rs. 3¾ lakhs already incurred on widening the Nira Left Bank Canal.

It was anticipated that 132,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would amount to Rs. 15·22 lakhs and the net revenue to Rs. 11·92 lakhs yielding a return of 2·4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

The Lloyd Dam at Bhatgar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the dam has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles in extent with an annual rainfall varying from 250 inches in the Ghats to 40 inches at Bhatgar. In addition to the sluices required for releasing water for irrigation purposes there are 81 waste weir gates for the control and regulation of the flood level in the lake.

The Nira Right Bank Canal has its head works at Vir, 17 miles from the Lloyd Dam. The designed discharges of the canal at head and at tail are 1,500 and 414 cusecs, respectively, the corresponding full supply depths

WORKING RECORD
FOR
NIRA RIGHT & LEFT BANK CANALS
1925 - 1940



28-10-40

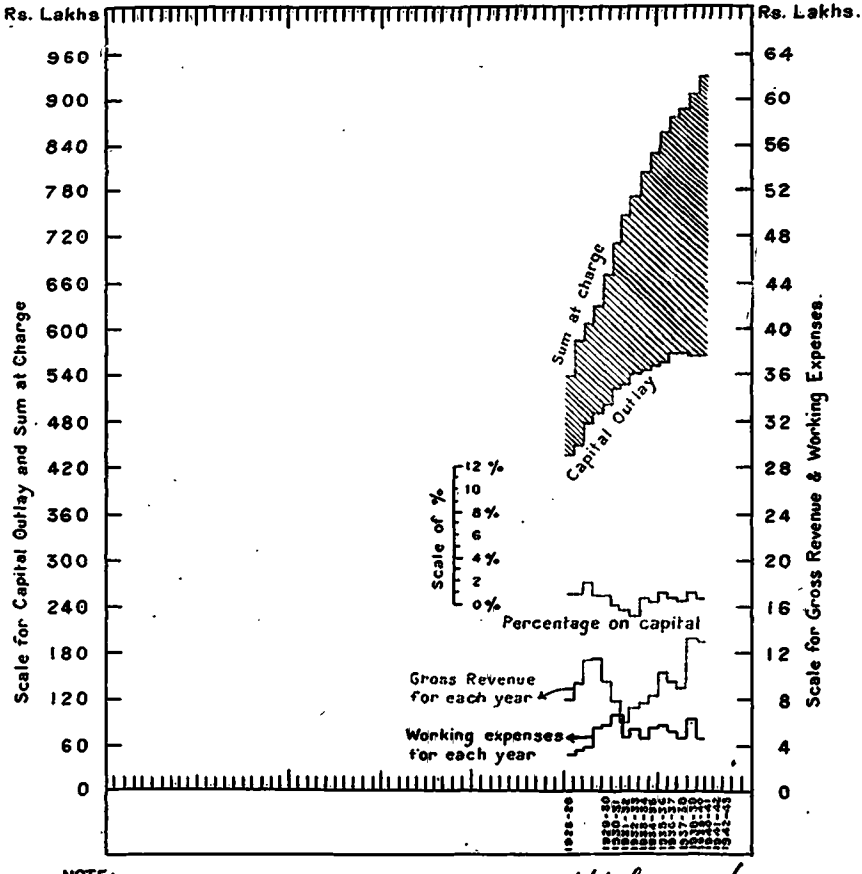
EXECUTIVE ENGINEER
NIRA CANALS DIVISION.

FINANCIAL RECORD

FOR

Nira Right & Left Bank Canals.

1925-1940



NOTE:-

THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL, GIVE SUM AT CHARGE. THE INTERCEPTS BETWEEN THE BLACK & RED LINES SHOW THE NET INCOME EACH YEAR.

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26-10-40.
EXECUTIVE ENGINEER.
NIRA CANALS DIVISION.

(c) G.R.Z.O. Poona, 1940.

being 8·5 and 6·5 feet, respectively. The canal about 106½ miles in length commands lands situated in the Satara and Sholapur Districts and the Phaltan State. Water was first supplied from the canal for the irrigation of rabi crops in 1924–25. The works on the main canal are completed. The Lloyd Dam was completed in the year 1928 and the Nira Right Bank Canal Project was completed in the year 1937–38. There are 3 branches and 69 distributaries taking off from the canal, while the culturable area commanded by it is 448,000 acres. The water regulation and distribution works on the canal are constructed on modern lines and the latest types of Standing Wave Flume measuring devices are provided at distributary heads on the channels. The whole of the perennial area under the canal has been surveyed and the soil classification carried out before designing the channels, while the lands suitable for perennial and other crops have been classified by the Irrigation Research Division and shown on maps.

On the 1st April, the level of the water in Lake Whiting at Bhatgar was 108·15 feet (full supply level 143 feet) above the sill of the sluices, the corresponding contents being 12,007·84 million cubic feet. The lowest level of 67·00 feet was reached on the 30th June, the corresponding contents being 2,602 million cubic feet. The lake began to fill subsequently and received replenishment up to its full supply level of 143 feet on the 8th September. Full supply level was maintained till the 18th September, when the draw-off for irrigation purposes commenced. On the 31st March 1940 the water level was at 95·90 feet, the corresponding contents being 8,342 million cubic feet. The rainfall gauged at Bhatgar during the year was 39·72 inches, while the rainfall in the Nira Right Bank Canal tract averaged 15·26 inches and that on the Nira Left Bank Canal averaged 16·74 inches.

The following table gives the area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
45,728.	43,289	6,12,167	4,14,446	6,30,920	4,33,074

Working expenses.		Realisations.		Rainfall.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,36,625	3,63,376	5,81,766	4,08,406	15·26	18·30

During the rabi season of 1939-40 water from the Nira Right Bank Canal was issued for irrigation on Branch No. III to supplement water from the Mhaswad Tank. The area thus irrigated on Branch No. III during the year was 7,127 acres and gross assessed revenue amounted to Rs. 31,554.

The increase in the area irrigated and revenue was due to increase in cane area. The area under sugarcane was 8,660 acres as compared with 5,196 acres in the previous year. The areas of sugarcane blocks and two-season blocks were 3,549 acres and 9,472 acres as compared with 2,557 acres and 10,017 acres, respectively, in the previous year. The area of garden and fruit blocks totalled 99 acres as compared with 100 acres of the previous year. The remissions sanctioned during the year amounted to Rs. 164.

The cost of the measuring establishment employed was pies 5 per acre as against pies 4 of the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 1,20,252. The perennial section of the Nira Right Bank Canal extended up to mile 79.

Nira Left Bank Canal.

This canal forms part of the scheme known as the Nira Valley Development Project and irrigates lands situated on the left bank of the Nira river. It is one or the pioneer irrigation works in the Deccan and protects a tract in the Poona District, with a very precarious rainfall. The original scheme consisted of—

(*a*) A ghat-fed storage tank at Bhatgar (Lake Whiting) about 32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water ;

(*b*) A pick-up-weir at Vir on the Nira river about 17 miles down-stream from Bhatgar ;

(*c*) A canal about 100 miles long irrigating about 80,000 acres annually ; and

(*d*) The Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet for the purpose of storing a portion of the surplus monsoon discharge.

The original masonry dam at Bhatgar, 127 feet high has since been replaced by the higher Lloyd Dam mentioned above. The original works were commenced in 1881 and the canal came into operation in 1885–86. The canal originally had a capacity of 456 cusecs but it has now been remodelled to carry a discharge of 720 cusecs. The canal, together with the tank, commands a gross area of 201,000 acres while the area commanded by the Shetphal Tank itself is 23,500 acres. The culturable area under the canal is 149,821 acres.

Nira Valley Development Project.

This project was designed for the complete development of irrigation in the Nira Valley. It provided, *inter alia*, for the widening and remodelling of the Nira Left Bank Canal in order that the canal should

irrigate an additional area of 19,000 acres of various types of crops and the construction of a new dam at Vir designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatgar. The construction of the Vir Dam, estimated to cost about a crore of rupees which was abandoned on the assumption that by economical distribution of the water available, the storage at Bhatgar would be sufficient to meet all irrigation requirements of the Nira Valley, will however have to be reconsidered owing to the development of irrigation by the opening of sugar factories in the Valley. The remodelling of the Nira Left Bank Canal, which was started in the year 1925–26, has made considerable progress and the work is expected to be completed by the end of the year 1941–42. The expenditure incurred during the year amounted to Rs. 35,176.

The rainfall at Bhatgar was 33·72 inches as compared with 51·95 inches of the previous year. The rainfall along the Nira Left Bank Canal was 16·74 inches. The water in the Shetphal Tank reached its lowest depth of 25·20 feet on the 15th April 1939, the corresponding contents being 230·95 million cubic feet. The tank reached the full supply level of 37·50 feet on the 5th October 1939, the corresponding contents being 572·53 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
74,755	75,715	7,67,607	7,35,195	7,88,421	7,48,139

Working expenses.		Realisations.		Rainfall.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,16,117	2,12,633	7,53,972	6,81,259	16·74	18·49

The area of sugarcane blocks was 16,560 acres on the Nira Left Bank Canal and that on the Shetphal Tank, 1,644 acres compared with 13,028 and 1,495 acres, respectively, during the previous year, while the area under two-season blocks on the Nira Left Bank Canal was 18,630 acres and on the Shetphal Tank 1,418 acres compared with 22,628 and 1,335 acres, respectively. The cost incurred on the measuring establishment

employed was 5 pies per acre—against pies 4 of the previous year. Remissions amounting to Rs. 578 and no refunds were sanctioned during the year under report. The cost of maintenance and repairs amounted to Rs. 80,511.

The perennial section of the Nira Left Bank Canal is up to mile 75 and that of the Shetphal Tank is up to mile 10 of the Shetphal Channel.

POONA IRRIGATION AND RESEARCH DIVISION.

MUTHA CANALS.

This system came into operation in 1874-75. The canals were constructed at a cost of about Rs. 65½ lakhs, including the cost of a large ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakwasla, about 12 miles from Poona. The dam is 107 feet high, spanning the valley of the Mutha. The system comprises two canals, the Mutha Right Bank and Mutha Left Bank Canals, 70 and 18 miles long, respectively. The maximum designed discharges of the two canals at their heads are 412 and 38·5 cusecs, respectively. Both the canals take off direct from the lake, which has a storage capacity of 3,955 million cubic feet, of which 508 million cubic feet are reserved for the Poona Water Supply system as a margin of safety in the event of replenishment being received late. The storage is partly utilised for drinking and domestic purposes in Poona and partly for irrigation. The supply available for irrigation being insufficient the perennial limit of the Mutha Right Bank Canal is restricted to the reach between the head of the canal and mile No. 23⅝, i.e., up to and including Distributary No. 9. Even so the supply available in the lake is totally inadequate to meet the increasing demands on it and a project for increasing the storage is under consideration. The Matoba tank is a tail tank receiving the surplus supply of the canal during the monsoon months.

On 1st April, the level of water in Lake Fife was 19·90 feet above the sill of the canal sluices, the corresponding contents being 1,656 million cubic feet, as compared with 20·95 feet and 1,775 million cubic feet in the previous year. The lowest level reached was 8·30 feet above sill level on the 15th of June when replenishment commenced. The lake filled to the level of the sills of the waste weir on 7th July and water was stored to 33·90 feet (contents 3,626 million cubic feet) above sluices on 15th September and the draw off commenced from 18th September 1939. The run-off from the catchment of the lake (196 square miles) amounted to 36,420·00 million cubic feet. The level of water on the 31st March 1940 was 18·35 feet, the corresponding contents being 1,490 million cubic feet as compared with 19·90 feet and 1,657 million cubic feet, respectively in the previous year. The rainfall at Khadakwasla was 20·25 inches as compared with 40·60 inches in the previous year. The Matoba tank dried up on the 15th February 1939. Replenishment from the Mutha Right Bank Canal commenced from the 15th June. The full supply level of the tank (29 feet) was reached on the 22nd September 1939.

the corresponding contents being 220·54 million cubic feet. The level of water of Lake Fife on the 31st March 1940 was 18·35 feet, the corresponding contents being 1,490 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
16,211	15,455	1,75,770	1,62,906	3,86,689	3,61,490

Working expenses.		Realisations.		Rainfall.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
98,522	99,057	3,39,675	3,78,411	14·19	21·08

The area cultivated under sugarcane was 2,225 acres as compared with 2,030 acres in the previous year. The area under two-season blocks on the Mutha Canals was 1,980 acres and that on Matoba Tank 1,800 acres as compared with 1,566 and 1,752 acres, respectively, in the previous year. The quantities of water supplied to the Poona Cantonment and Poona City Municipality during the year was 1,326 and 3,154 million gallons, respectively, as compared with 1,193 and 2,564 million gallons, respectively, in the previous year. The revenue assessed amounted to Rs. 52,427 and Rs. 1,28,162 respectively compared with Rs. 47,765 and Rs. 1,15,423 respectively, during the previous year. The cost incurred on the measuring establishment employed was equivalent to a figure of Re. 0–1–1 per acre against Re. 0–1–5 in the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 38,550.

NASIK IRRIGATION DIVISION.

Godavari Canals.

This is one of the major irrigation works undertaken in the Deccan for the protection of areas liable to famine. It was started in 1907 and

completed in 1915–16 at a cost of about 1 crore of rupees. The system comprises—

(1) A storage reservoir (Lake Beale) on the Darna River, a tributary of the Godavari, situated about 20 miles from Nasik ;

(2) A pick-up-weir at Nandur-Madhmeshwar on the Godavari 47 miles below the Darna Dam, which impounds the water released from the storage reservoir ; and

(3) Two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District and the Left Bank Canal, 48 miles long, which irrigates lands north of the Godavari in the Nasik and Ahmednagar Districts.

The length of the Darna Dam (inclusive of its waste weir) exceeds a mile and the dam had a maximum height of 92 feet above its lowest foundation level. The lake has a storage capacity of 7,763 million cubic feet and the cost of the dam was Rs. 34·27 lakhs. The catchment area is 156 square miles. The weir at Nandur-Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels to the latter clear of silt. The total area under the command off the canals is 232,390 acres. The two canals (Right Bank and Left Bank) are designed to discharge 384 and 228 cusecs at their heads, respectively, with full supply depths of 7 feet and 6 feet, respectively.

On the 1st April, the level of water in the lake was 56·40 feet, the corresponding contents being 5,146 million cubic feet. The lowest level of 52·30 feet was reached on the 30th June, the contents being 2,414 million cubic feet, when the lake began to receive replenishment, until it over-flowed on the 14th July. The draw-off for irrigation purposes commenced on the 30th October with a water level of 73·90 feet, the corresponding contents being 7,394 million cubic feet. On the 31st March 1940 the level of water was 54.4 feet, the corresponding contents being 2,694 million cubic feet. The perennial limit of the Right Bank Canal is up to mile 69 and that of the Left Bank Canal up 44 miles . The average rainfall in the catchment area of the lake was 32·57 inches.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the corresponding avarages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	415	457	1,349	1,552	6,35,162	4,62,763
Godavari Right Bank Canal	20,573	23,100	3,28,783	2,59,164		
Godavari Left Bank Canal .	16,751	15,145	2,83,773	1,75,750		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	2,61,927	2,79,127	4,68,642	4,00,707	....	....
Godavari Right Bank Canal					16·88	22·58
Godavari Left Bank Canal .					18·66	21·43

The increase in the area irrigated and the assessed revenue was due to increase in cane areas as well as seasonals due to unsatisfactory rainfall. The area of sugarcane blocks was 10,449 acres as compared with 12,845 acres in the previous year. The area of two-seasonal blocks was 281 acres against 2,446 in the previous year. The cost of the measuring establishment employed was 10 pies per acre as was obtained last year. The remissions sanctioned during the year amounted to Rs. 1,064. The cost incurred on maintenance and repairs amounted to Rs. 99,019.

Chankapur Tank—Girna Canal.

This is comparatively small irrigation system situated in the Nasik District having its storage reservoir at Chankapur fed from a catchment of 100 square miles in extent and its pick-up-weir at Thengoda situated further downstream on the Girna river, from which weir the Girna canal (19 miles in length) takes off. The tank is situated on the Girna river, a tributary of the Tapti and has been formed by the construction of a

masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam and the canal (up to mile 13) were completed in 1909–10 and the canal has been in operation since then. The extention of this canal designed to carry about 40 cusecs, up to mile 19 was completed in 1920–21. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the corresponding full supply depth being 4½ feet and 2 feet, respectively. The total area under the command of the canal is 29,182 acres and the irrigable area is 8,500 acres.

On the 1st April, the level of water in the tank was 82·4 feet, the corresponding contents being 1,039 million cubic feet. The lowest level of 72·45 feet was reached on the 9th June (contents 683 million cubic feet) when the lake began to receive replenishment, until it reached 90·5 feet. The first draw off for irrigation purposes commenced on the 28th October with the level of water at 86·60 feet, the corresponding contents being 1,235 million cubic feet. On the 31st March 1940, the level of water was 77·95 feet, the contents then being 862 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Acres. 10,280	Acres. 10,568	Rs. 1,02,359	Rs. 1,01,455	Rs. 1,04,418	Rs. 1,03,445

Working expenses.		Realisations.		Rainfall.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Rs. 70,892	Rs. 57,219	Rs. 73,377	Rs. 80,968	Inches. 24·80	Inches. 25·92

The decrease in the area irrigated is negligible. The increase in the assessed revenue was due to increase in cane area. The cane area was 3,084 acres as compared with 1,767 acres in the previous year. The cost of measuring establishment was equivalent to 8 pies per acre as compared with 7 pies obtained during the previous year. The remissions sanctioned during the year amounted to Rs. 221. The expenditure incurred on maintenance and repairs amounted to Rs. 24,107.

Kadwa River Works.

These works, which came into operation in 1868–69, consist of three small canals, viz., the Palkhed, the Ojhar Tambat and the Wadali, taking off from weirs constructed across the Kadwa river and its tributary the

Banganga. The system comprises 38 miles of canals and distributaries. The storage reservior is at Waghad (a ghat-fed storage) situated on the Kolwan river in the Nasik District. The catchment of the tank is 29 square miles in extent. The tank is remarkable for the size of its earthen dam, which has a maximum height of 96 feet. The designed discharges of the Palkhed canal at its head and at its tail are 90 cusecs and 15 cusecs, respectively, the corresponding depths at full supply being 4½ feet and 2 feet. The designed discharges of the Ojhar Tambat canal at its head and at its tail are 33 cusecs and 5 cusecs, respectively, the depths at full supply being 3 feet and 1 foot, respectively. The designed discharges of the Wadali canal at its head and at its tail are 19 cusecs and 5 cusecs, respectively, the depths at full supply being 2 feet and 1 foot, respectively.

On the 1st April, the level of water in the tank was 40·85 feet above the sill, the corresponding contents being 317·2 million cubic feet. On the 1st July the level of water fell to 30·30 feet, the contents being 118·20 million cubic feet when the lake began to receive replenishment until it overflowed on the 8th July 1939. The draw-off for irrigation purposes commenced on the 23rd November with a water level of 47·10 feet, the corresponding contents being 491·70 million cubic feet. On the 31st March 1940 the level of water was 39·15 feet, the corresponding contents being 258·20 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross revenue assessed.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed Canal ..	2,182	2,215	18,259	18,564		
Ojhar Tambat Canal ..	1,224	1,059	10,602	9,888	39,476	38,490
Wadali Canal ..	724	799	7,990	8,612		

Name of Canal.	Working expenses.		Realisations.		Rainfall.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed Canal ..					28·60	31·00
Ojhar Tambat Canal ..	31,117	31,615	31,354	31,504	23·21	25·49
Wadali Canal ..					18·49	31·72

The decrease in the assessed revenue is negligible. The expenditure on maintenance and repairs amounted to Rs. 12,659.

The cost incurred on the measuring establishment employed was 9 pies per acre as against 8 pies for the previous year. Remissions sanctioned during the year amounted to Rs. 664.

AHMEDNAGAR DIVISION.

Pravara River Works.

This canal system, which was constructed at a cost of Rs. 1½ crores, comprises : —

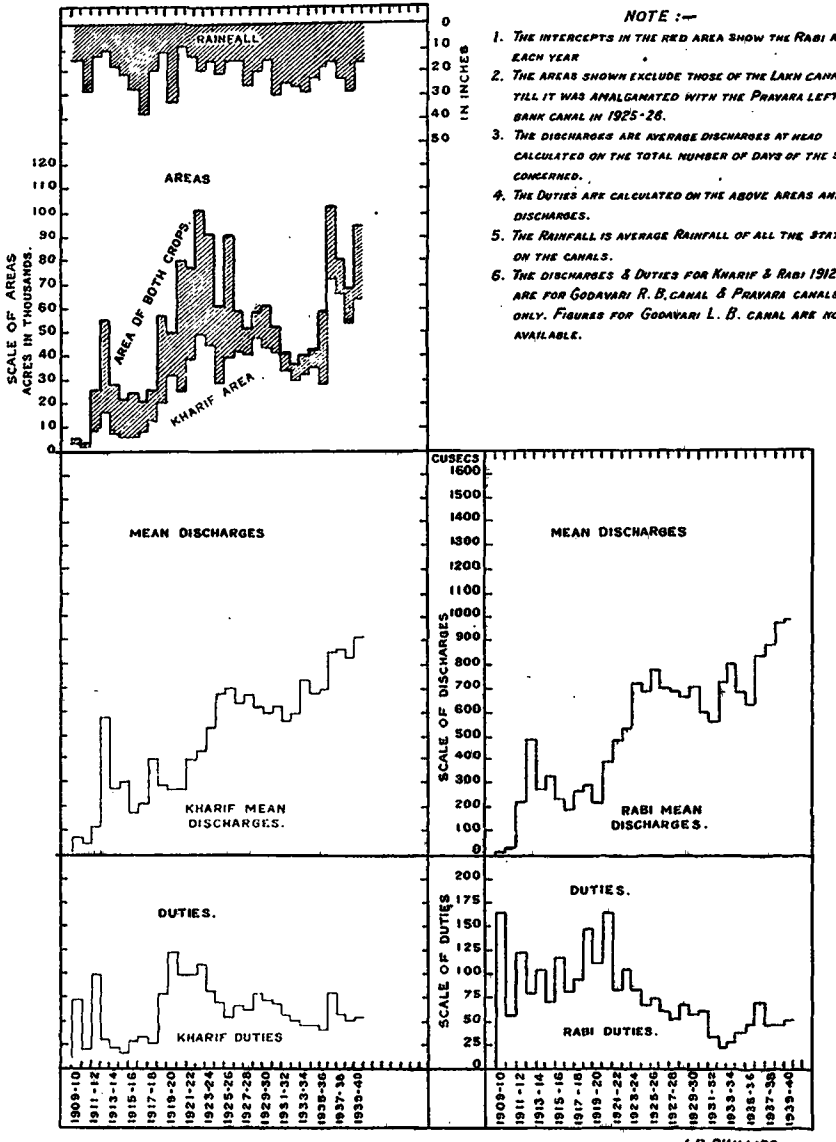
(1) The Wilson Dam at Bhandardara on the Pravara river. This dam which impounds the water of the Lake Arthur Hill, is one of the highest dams in the world having a height of 282 feet. It is 1,600 feet in length and the lake formed by the dam has a storage capacity of some 12,092 million cubic feet.

(2) A pick-up-weir, 890 feet long, situated at Ojhar, 53 miles downstream from Lake Arthur Hill, and about 8 miles east of Sangamner ; and

(3) Two canals, the Pravara Right Bank Canal, 33 miles long, and the Pravara Left Bank Canal, 48 miles long, which take off at the weir at Ojhar.

These canals irrigate lands in the Ahmednagar District and command an area of 228,720 acres. The designed discharges of the two canals (Pravara Right and Left Bank Canals) at head are 152 and 530 cusecs, respectively, the corresponding full supply depths being 5 feet and 8 feet. The work of remodelling the first 16½ miles of the Pravara Left Bank Canal and the Northern Branch has almost been completed in order to meet the increased demand for water from the sugar factories established on the Left Bank Canal and the work of remodelling Distributaries Nos. 8 and 9 and Water Course Nos. 32, 33 and 34 of the Pravara Left Bank Canal was started. With the remodelling of the canal and the rotational running now practised weeds do not appear at present. The Ojhar weir has been raised by two feet for additional storage. The height of the waste weir at Bhandardara was raised by 2·5 feet by constructing a crest wall. The construction of the Wilson Dam, which impounds the water of Lake Arthur Hill, was commenced in 1911 and completed in 1926. The catchment area of the lake is 47 square miles ; it is situated in the ghats and has an assured run-off. The dam is designed to impound a maximum depth of water of 270 feet and is constructed across a gorge in the valley of the Pravara river. At present water is impounded to a depth of 262·5 feet giving a storage of 10,557 million cubic feet and this could be increased to 12,092 million cubic feet with a corresponding depth of 270 feet by the erection of automatic gates on the waste weir or by the construction of syphon spillways and the raising of the waste weir.

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED WORKING RECORD.
FOR THE YEARS 1910-40.



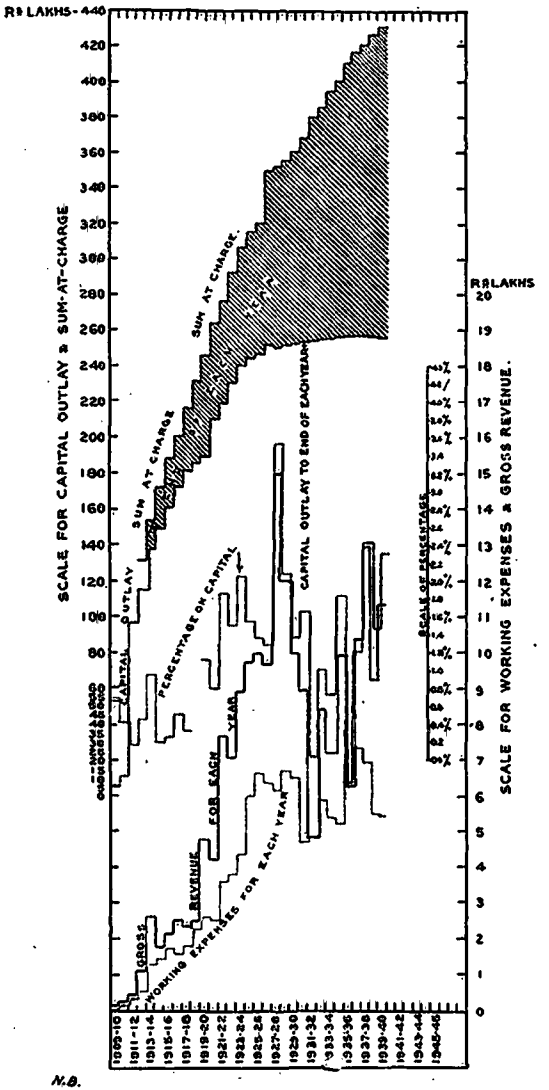
NOTE :—

1. The intercepts in the red area show the Rabi areas each year
2. The areas shown exclude those of the Lakh canal till it was amalgamated with the Pravara left bank canal in 1925-26.
3. The discharges are average discharges at head calculated on the total number of days of the season concerned.
4. The Duties are calculated on the above areas and discharges.
5. The Rainfall is average Rainfall of all the stations on the canals.
6. The discharges & Duties for Kharif & Rabi 1912-13 are for Godavari R. B. canal & Pravara canals only. Figures for Godavari L. B. canal are not available.

(c) C.P.L.O. Poona, 1940.

J.R. PHILLIPS.
19-9-40.
Executive Engineer.
Ahmednagar Division.

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED FINANCIAL RECORD.
FOR THE YEARS 1910 - 40



N.B.

THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR; WHICH BEING ADDED TO THE CAPITAL, GIVES SUM AT CHARGE.

THE INTERCEPTS BETWEEN THE GREEN & BLACK LINES SHOW THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN.	CANAL WAS OPENED IN.
GODAVARI CANALS.	1907	1911-12
PRAVARA CANALS.	1909	1909-10

J.R. PHILLIPS.
1939-40.
EXECUTIVE ENGINEER
AHMEDNAGAR DIVISION.

S.R.S.O. Press, 1940.

On the 1st April, the level of water in the lake was 228·10 feet, the corresponding contents being 5,582 million cubic feet. The lowest level of 163·70 feet was reached on the 30th June, the contents being 1,375 million cubic feet. Replenishment commenced with effect from the 1st July and the full supply level of 264·5 feet was reached on the 24th August, the contents being 10,948 million cubic feet. The maximum flood occurred on the 26th August, when the level was 267·50 feet, which lasted for about 12 hours. The full supply level was maintained till the 26th September 1939 and the draw off for irrigation purposes commenced on this date. The level of water gradually fell to 232 feet on the 15th February 1940, the contents being 6,017 million cubic feet. The level of water on the 31st March 1940 was 216·80 feet, the corresponding contents being 4,469 million cubic feet. The yield from the catchment (47 square miles) of the lake was 19,393·78 million cubic feet while the average rainfall of the several raingauge stations was 189·66 inches. The rainfall was quite unsatisfactory.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal.	12,232	10,256	1,61,796	1,23,129	1,65,139	6,27,660
Pravara Left Bank Canal ..	45,471	35,546	6,90,385	4,93,223	7,53,632	

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal.	2,85,667	3,78,752	6,70,295	6,77,971	15·82	23·23
Pravara Left Bank Canal ..					15·99	24·98

The increase in the area irrigated and the irrigation assessment was due to increase in sugarcane irrigation. The total area of sugarcane

blocks was 6,633 acres while the area under two-seasonal blocks was 823 acres as compared with 6,526 acres and 926 acres, respectively, in the previous year. The remissions sanctioned during the year amounted to Rs. 8,734. The cost of the measuring establishment was equivalent to 13 pies per acre as was for the previous year. The expenditure incurred on maintenance and repairs to the Wilson Dam and the two canals amounted to Rs. 87,424.

Bhatodi Tank.

This is a small tank situated on the Mehekri river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply. Due to silting, the storage capacity of the tank has been reduced from 154 million cubic feet to about 40 million cubic feet. The first replenishment was received on 4th June, which raised the level of water to 17·50 feet. The highest level of 22·80 feet was reached on 6th August, and the waste weir overflowed to a depth of 0·30 feet. The lowest level in the tank was 15·50 feet on the 6th January 1940.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
699	641	3,061	3,172	3,872	4,401

Working expenses.		Realisations.		Rainfall.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,836	2,529	6,264	5,649	18·55	24·06

The area of two-seasonal blocks was 521 acres. No remissions were sanctioned during the year under report. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 1,190.

CENTRAL CIRCLE.

POONA DIVISION.

KASURDI TANK.

This tank which dried up on 3rd December 1938 received its first replenishment on the 7th June 1939 up to a level of 17·50 feet with corresponding contents of 9·14 million cubic feet and dried on 3rd July 1939. Further replenishment was received on the 4th July to the level of 17·70 feet but the tank became dry again on 28th July. Though the tank received further replenishments on 22nd September and 23rd October it finally dried on 3rd November. The tank is almost completely silted up to the depth of 15 feet and hence the irrigated area is small. The leasing out of the tank bed for cultivation is the main source of revenue and fetched Rs. 1,033 during the year under report.

SHIRSUPHAL TANK.

On the 15th February 1939, the level of water in the tank was 23·65 feet, the corresponding contents being 154·19 million cubic feet. Replenishment was received on the 29th June. The highest level reached was 25·10 feet on the 1st August, the corresponding contents being 184·33 million cubic feet. The tank did not fill to its full supply level. The supply available was fully utilised for irrigation.

BHADALWADI TANK.

On the 15th February 1939, the level of water in the tank was 27·10 feet the corresponding contents being 91·38 million cubic feet. The lowest level of 23·65 feet was recorded on the 9th June, the corresponding contents being 58·20 million cubic feet. The tank received replenishment on 10th June, and the full supply level of 35 feet was reached on the 4th July, the corresponding contents being 190·74 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of tank.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Kasurdi	23	35	1,075	868	627	1,021
Shrisuphal	1,336	957	6,795	5,096	2,649	3,099
Bhadalwadi	1,162	1,306	5,848	6,821	2,640	3,292

SATARA DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the 6 works mentioned below as compared with the averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1. Krishna Canal ..	5,128	4,501	56,493	46,898	27,214	32,594
2. Rewari Canal ..	601	635	3,114	3,823	2,670	2,043
3. Upper Man River Works.	1,088	921	5,184	5,180	12,256	8,398
4. Yerla River Irrigation Works.	4,029	3,738	20,960	21,713	10,623	10,579
5. Chikhli Canal ..	332	317	2,409	2,293	2,136	1,340
6. Maini Tank ..	1,403	1,174	6,973	6,101	4,140	4,257

KRISHNA CANAL.

The total rainfall gauged at Retre Budruk, which is situated in the centre of the canal tract, was 20·82 inches, as compared with the average of 27·15 inches for the past three years. Water could not be made available for sugarcane beyond mile 1614 of the canal, because of insufficient summer flow in the river and of very little storage capacity at the head works. The work of silt clearance has been completed from mile Nos. 6 to 35/2.

REWARI CANAL.

The rainfall gauged at Rewari, which is situated one mile below the bandhara, was 17·87 inches, as compared with 24·97 inches, the average of the preceding three years. The decrease in revenue was due to the grant of concessional rate for Rabi Jowar crop sanctioned in G. R., P. W. D., No. 632/36, dated 21st August 1939.

Upper Man River Works.

(*Pingli Tank.*)

On the 1st April, the level of the tank was 12·77 feet i.e. at R. L. 2,361·86 equivalent to a storage of 46·42 million cubic feet. The supply was utilised for hot weather irrigation. The first replenishment was received on the 7th June when the water level was 10 feet or at R. L. 2,359·09 which was equivalent to a storage of 25·76 million cubic feet. A further replenishment was received on the 29th June when the level rose to 12·9 feet equivalent to 47·52 million cubic feet. The highest level of 19·80 feet was reached on the 8th November with the corresponding contents of 123·68 million cubic feet. The waste weir did not overflow this year. The rainfall gauged at Gondawla, which is situated 3 miles below the tank, was 18·36 inches compared with 18·35 inches, the average of the preceding three years.

Yerla River Irrigation Works.

(*Nehr Tank.*)

On the 1st April the level of water in the tank was 16·02 feet the R. L. being 2,656·64 equivalent to a storage of 183·01 million cubic feet. The supply was utilised for hot weather irrigation. The first replenishment was received on the 18th June, which raised the water level to 16·40 feet i.e. to R. L. 2,657·02 equal to 190·42 million cubic feet. Another replenishment was received on the 29th June which raised the level to 18·30 feet or to R. L. 2,658·92, i.e., equivalent to 229·74 million cubic feet. The highest level was reached during the year on the 26th September when the level rose to 24·10 feet the contents being then 370·60 million cubic feet and the R. L. 2,664·72. Water did not flow over the waste weir this year. The rainfall gauged at Nehr was 18·86 inches as compared with 27·43 inches, the average of the preceding three years. Due to shortage of rainfall and the concessional rate sanctioned in G. R., P. W. D., No. 632/36, dated 21st August 1939, there was an increased demand for water which resulted in increased area.

Chikhli Canal.

On the 1st April, the level of the water in the river was 2 feet. The first flood, which occurred on the 7th June raised the level by 4·5 feet and the waste weir began to overflow. The second replenishment was received on 28th June. The rainfall gauged at Chikhli was 8·40 inches compared with 18·57 inches, the average of the preceding three years.

Maini Tank.

On the 1st April, the tank was dry and it remained so until the first replenishment was received on the 28th June raising the level to 9·70 feet or to R. L. 2306·22 and the tank overflowed. It remained full till 10th August. The second replenishment was received on 18th September with the R. L. at 2304·57 and the tank began to overflow again. The rainfall gauged at Maini was 14·04 inches as compared with 19·09 inches the average of the preceding three years.

SHOLAPUR DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the tanks in the Sholapur Division, as compared with the corresponding averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank ..	4,603	4,277	1,58,389	1,46,382	23,261	18,382
Koregaon Tank ..	583	307	2,133	1,682	2,003	1,941
Ashti Tank ..	3,069	3,461	13,540	22,178	10,701	10,440
Pathri Tank ..	650	704	9,637	11,869	3,692	3,561

Ekruk Tank.

The Ekruk Tank, situated near Sholapur, which came into operation in the year 1872–73, is an artificial reservoir formed by the construction of a large earth enembankment 7,000 feet long and having a maximum height of 76 feet. It supplies water not only for irrigational purposes but also to the town of Sholapur, the mills in Sholapur and the Great Indian Peninsula Railway for non-irrigational purposes. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage is under consideration.

On the 1st April, the level of the water in the tank was 34·52 feet above the sill of the outlet. The storage available on the 31st May was found

sufficient to admit of cultivation of 500 acres of hot weather and 1,200 acres of monsoon crops in addition to 230 acres of cane. Owing to partial failure of rains, the tank did not receive satisfactory replenishments during the monsoon. Water applications for 2,200 acres only were sanctioned for Rabi area inclusive of 1,200 acres of leased area. The highest level of water reached was 33·05 feet on 9th July. The mean rainfall gauged at the five stations in the catchment area of the tank was 14.59 inches as compared with 22·91 inches, the average of the preceding three years, and the total replenishment received amounted to 678·51 million cubic feet. The waste weir did not overflow during the year.

Koregaon Tank.

On the 1st April, the level of the water in the tank was at R. L. 86·67 feet i.e. 6·67 feet above the sill of the outlet. Hence water was available for hot weather and kharif crops. The tank received a replenishment on 18th June but it was not sufficient owing to partial failure of rains. The waste weir did not overflow. The rainfall recorded was 19·61 inches as compared with 23·86 inches, the average of the preceding three years. The total replenishment received during the year was 40·35 million cubic feet which was fully utilised for irrigation during rabi season.

Ashti Tank.

On the 1st April, the level of the water in the tank was at R. L. 220·25 i.e., 9·50 feet above the sill of the outlet. Hence water was available for hot weather and Kharif crops. The tank received first replenishment on 11th June but owing to partial failure of rains it was not sufficient and the waste weir also did not overflow during the year. The mean rainfall gauged at the two stations situated in the catchment was 16·83 inches as compared with the average of 18·89 inches for the preceding three years. The total replenishment received during the year was 436·28 million cubic feet which was fully utilised for irrigation during the rabi season.

Pathri Tank.

The tank supplies water to the town of Barsi and the mill industries, as well as for irrigational purposes. On the 1st April, the level of the water in the tank was at R. L. 236·45 i.e., 25·15 feet above the sill of the outlet. Though the tank received a replenishment on 18th June it was not sufficient. The waste weir also did not overflow owing to partial failure of rains. The mean rainfall gauged at the two stations, situated in the catchment area was 15·59 inches as compared with 30·18 inches, the average of the preceding three years. The total replenishment received during the year was 48·70 million cubic feet which was fully utilised for rabi irrigation after reserving sufficient water for the Barsi Municipality.

Mhaswad Tank.

This irrigation tank is formed by an earthen dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point.

The tank, which is situated on the eastern border of the Satara District, has a storage capacity of 2,602 million cubic feet and supplies water for the irrigation of lands situated mostly in the Sholapur District. Owing to the precarious nature of the rainfall received in the catchment area the supply is not reliable. The tank is provided with a masonry overflow waste weir. The project was commenced in 1876–77 and completed in 1888–89. There is only one canal taking off from the left flank of the dam, previously called Mhaswad Canal No. 1 and now termed Mhaswad Canal, Part I. The designed discharge of the canal is 180·7 cusecs, whereas the present actual discharge is about 146 cusecs with a full supply depth of 4 feet. The Nira Right Bank Canal cuts across the Mhaswad Canal at mile 15 and the old Mhaswad Canal has been remodelled to function as Branch III of the Nira Right Bank Canal passing a discharge of 300 cusecs. No water from the Nira Right Bank Canal is now available for Branch III of the Nira Right Bank Canal system and the irrigation on this branch is being carried out with water obtained from the Mhaswad Tank but the supply is always insufficient to meet the full demand. Hence water from the Nira Right Bank Canal has to be borrowed so as to meet the demand of the irrigators.

On the 1st April, the level of water in the tank was 15·20 feet above the sill of the outlet. The tank received replenishments between June and September with the result that the waste weir overflowed on 23rd, 25th and 26th September and again on 1st and 2nd November. The available supply was utilised in meeting the hot weather and kharif demands. Water from the Nira Right Bank Canal had also been obtained to supplement the Mhaswad Tank supply in the Rabi season so as to meet the demands of the irrigators. The total replenishment received during the year was 3894·63 million cubic feet.

The rainfall in the Canal tract was 17·76 inches compared with 17·32 inches, the average of the preceding three years.

The following table shows the area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1939–40.	Average.	1939–40.	Average.	1939–40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,979	3,110	10,923	18,507	20,210	15,522

The area irrigated and gross revenue assessed during the year on Branch No. III of the Nira Right Bank Canal referred to above, were 7,127 acres and Rs. 31,554, respectively.

KHANDESH DIVISION.

JAMDA CANALS.

These canals receive their supply from the Girna river and the supply is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. During the year under report no water could be obtained from the Chankapur Tank. The rainfall during the year was 23·05 inches, as compared with 27·83 inches, the average of the preceding three years. The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,777	1,382	13,547	12,188	24,435	15,354

The increase in the area was chiefly due to the rabi area nearly doubly increased when compared with the previous year owing to inadequate rainfall resulting in greater demand for water.

HARTALA TANK.

The tank derives its supply solely from local rains and this supply is precarious. On the 1st April, the storage of the tank amounted to 30·38 million cubic feet and this gradually diminished to 17·81 million cubic feet. The first replenishment which was received on the 18th June, raised the contents to 19·18 million cubic feet. The maximum storage of 56·52 million cubic feet was reached on the 24th September. The tank became completely dry on 31st March 1940. The rainfall gauged at the tank was 27·14 inches as compared with 40·92 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
42	15	165	235	916	846

Mhaswa Tank.

The tank derives its supply from local rains. On the 1st April, the storage of the tank amounted to 20·85 million cubic feet, which gradually diminished to 0·53 million cubic feet. The first replenishment was received on the 18th June, when the contents increased to 39·13 million cubic feet. The maximum storage of 193·29 million cubic feet was reached on the 9th July ; on the 31st March, the storage was 15·78 million cubic feet. The rainfall gauged at the tank was 26·73 inches as compared with 23·65 inches, the average of the preceding three years.

The area irrigated, the gross assessed revenue and the working expenses, as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
550	238	3,278	3,114	1,184	1,251

The increase in the area and consequent increase in the gross revenue were due to greater demand for water during the rabi season on account of reduction in water rates.

Shahada Channel.

The channel is fed by the Gomai river, which has a perennial flow. The rainfall gauged at Shahada was 17·43 inches as compared with 25·70 inches, the average of the preceding three years. There was sufficient supply of water throughout the year and the demand for water was normal in both Kharif and Rabi seasons.

The area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
974	994	966	952	12,154	11,487	6,848	6,270

Lower Panjhra River Works.

These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra river, and the Mukti Tank, which is situated about 4 miles to the South-West of Dhulia. The channels obtain their supply from the river but when the supply is insufficient, it is supplemented by water obtained from the Mukti Tank.

On the 1st April, the contents of the tank were 242·24 million cubic feet, which gradually diminished to 180·66 million cubic feet. The first replenishment was received on the 4th July which raised the contents to 184·54 million cubic feet. The maximum storage of 237·58 million cubic feet was reached on the 2nd September. The year closed with a storage of 230·59 million cubic feet. The rainfall gauged within the catchment at Dayana and Sadgaon during the year was 18·02 inches as compared with 21·61 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,277	1,273	1,209	1,120	26,239	26,075	4,481	4,194

NASIK DIVISION.

PARSUL TANK.

This tank is formed by an earthen dam across the Parsul river in the Malegaon Taluka of the Nasik District. It depends solely on local rains for its supply. The storage capacity of the tank is 119 million cubic feet with a depth of 35 feet. There is no canal and the irrigation is done by small channels taking off the Parsul river itself downstream of the tank.

On the 1st April, the level of water in the tank was 19·75 feet, the corresponding contents being 42·00 million cubic feet. The first replenishment was received on 20th June. The level of water reached 33·40 feet on the 31st October and continued till 10th November, the corresponding contents being 107·34 million cubic feet. The level of water on the 31st March 1940 was nil feet, the corresponding contents being also nil. The average rainfall in the catchment areas of the tank was 18·62 inches compared with 15·46 inches, the average of the preceding three years.

The following table gives the figures of area irrigated, revenue assessed, etc. during the year as compared with the averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1939-40.	Average.	1939-40.	Average.	1939-40.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
923	888	4,993	3,723	2,676	1,520

The cost of the measuring establishment employed was equivalent to 7 annas 7 pies per acre. An expenditure of Rs. 789 was incurred on maintenance and repairs during the year.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

GADIKERI TANK.

The lands under the command of the tank are all assessed at consolidated rates. The area irrigated and the irrigation share of the land revenue assessed were 423 acres and Rs. 2,344 respectively.

GOKAK CANAL.

This canal system is the most important irrigation scheme in the Southern Circle and consists of a reservoir formed by a masonry weir across the Ghataprabha river at Dhupdal in the Belgaum District, together with 16 miles of main and branch canals and 36 miles of distributaries. The canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal Storage is mainly intended for irrigating lands under the Canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with an agreement between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of the supply falling short of the quantity contracted for. During the year under report a rebate of Rs. 900 was paid to the Company.

Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per month in lieu of the rate of Rs. 5 per 10,000 cft. of water actually drawn and measured by a meter, owing to its periodical derangement. The total amount recovered from the Railway Company on this account was Rs. 600.

On the 1st April, the gauge reading of the water level in the Dhupdal Reservoir was 20·22 feet. The level gradually decreased to 12·77 feet on the 4th June. Owing to replenishment received the water in the Reservoir rose to 22·90 feet on the 14th June, causing overflow over the weir on the same day. There was a continuous overflow from that date except on three occasions, i.e. 17th to 23rd June, 1st to 6th July and 31st July to 17th August. During the whole monsoon, the highest flood depth over the crest was 4·44 feet on the 20th August. The maximum discharge for the day was 75,204·41 cusecs. In order to store water from the post-monsoon floods, the raising of the 4 feet temporary crest excepting the top two feet of the 100 reserve bays was commenced on 17th September and completed on 8th October. The closure of 100 reserve bays was carried out from the 4th to 8th November. The level rose to 26·06 feet (the full supply level) on the 20th November. This level continued until 24th December and then began to decrease. The level on the 31st March 1940 was 19·13 feet.

The following table gives information regarding the area irrigated and revenue assessed as compared with the average of the previous three years :—

	Area irrigated.	Gross assessed revenue.
	Acres.	Rs.
Average	9,357	70,345
1939–40	9,904	66,253

BIJAPUR DIVISION.

MUCHKUNDI TANK.

This tank is solely dependent on local rains for its supplies and the storage of water in the tank is uncertain owing to the scanty rainfall in the area and the smallness of the catchment. The rainfall recorded during the year, was less than the average of the previous three years. Owing to its favourable distribution during the year there was a decrease in the demand for tank water. The tank did not get dry during the year. The supply of water in the tank was sufficient for irrigating the lands dependent on it. The highest level of water during the year was R.L. 1800·74 or 17·3 feet above the sill of the outlet on the 23rd October 1939 against the R.L. 1799·14 or 15·7 feet above the sill of the outlet on the 8th October 1938. The gross assessed revenue was Rs. 666.

DHARWAR DIVISION.

DAMBAL TANK.

From the 1st April to the 23rd May the tank was empty. The tank received its first replenishment on the 24th May when the level of water reached was R.L. 137·30 or 1·10 feet above the silted bed of the tank. The highest water level reached during the year was R.L. 145·30 or 9·10 feet above the silted bed. Due to heavy floods on the 31st October, there was a four feet overfall from the waste weir resulting in certain damages.

Part of the land dependent on this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under water rates were 201 acres and Rs. 1,195 as compared with 211 acres and Rs. 787, the corresponding averages of the previous three years. The irrigated area under consolidated assessment and the Irrigation share of the land revenue assessed were 144 acres and Rs. 916 respectively. The total assessed revenue was Rs. 2,464.

Medleri Tank.

From the 1st to the 23rd April, there was no water in the tank. On the 24th April, the tank received its first replenishment when the water level of the tank was at R.L. 168·00 or 3 feet above the sill of the outlet. The tank again went dry from the 19th May to the 26th June. On the 27th June, the tank received further replenishment. The highest level reached during the year was at R.L. 180 or 15 feet about the sill of the outlet and just up to the crest of the waste weir.

The area irrigated and the assessment levied thereon were 32 acres and Rs. 270 as compared with 43 acres and Rs. 492 respectively, the averages of the past three years. The gross assessed revenue was Rs. 438

Madag Tank.

On the 1st April, the water level was at R.L. 1875·19 or 1·93 feet above the sill of the outlet. The tank received its first replenishment on the 14th July and overflowed from the 15th July to 29th March 1940. The highest level reached during the year was R.L. 1886·26 or 8·55 feet above the crest of the waste weir. The water level on the 31st March 1940 was R.L. 1876·97, i.e. 3·71 above the sill of outlet. The water supply was sufficient for Kharif, Rabi, and hot weather seasons, but due to favourable rains there was a poor response from the irrigators under the tank with the result that a large quantity of water remained unutilized in the tank at the close of the year.

The area irrigated and the assessment levied thereon were 374 acres and Rs. 1,680, respectively, as compared with 505 acres and Rs. 2,260 respectively, the corresponding averages of the previous three years. The decrease both in area irrigated and assessment was due to less demand for tank water. The gross assessed revenue amounted to Rs. 1,948 as compared with Rs. 3,246, the average of the previous three years.

Asundi Tank.

From 1st April to the 10th August, the tank was dry and consequently there was no Irrigation during the Kharif season of the year. It received its first replenishment on the 11th August when the level of water reached was R.L. 105·50, i.e. 6·50 feet above the sill of the outlet. The highest level reached during the year was R.L. 108·30 or 9·30 feet above the sill of the outlet. There was sufficient water in the tank up to the 31st March 1940, the level of water on that day being R.L. 103·13, i.e. 4·13, feet. Due to late replenishment, there was adequate Irrigation during the Rabi season of the year. The lands under this tank are partly assessed at water rates and partly at consolidated rates. The area irrigated and assessment levied thereon under the former head (water rates) were 172 acres and Rs. 954 as compared with 51 acres and Rs. 286, respectively, the corresponding averages of the past three years. The area under consolidated assessment was 190 acres and the Irrigation share of land revenue assessed thereon was Rs. 737. The gross assessed revenue amounted to Rs. 1,752 as compared with Rs. 1,416, the average of the past three years.

Dharma Canal.

This canal is fed by the Dharma river and a number of tanks are in turn fed by the canal. The canal began to flow on the 20th June. During the year, the rainfall was, on the whole, moderate and the supply of water throughout the season was fairly good except for slight breaks at the beginning of August and end of September which caused great anxiety for some time. Subsequent good showers brought great relief as both the first and second waterings were given in time. The condition of the crop was on the whole good.

During the year about 6 outlets which were badly leaking due to dilapidated masonry were reconstructed. Similarly, the work of constructing a cart bridge over the canal at Surleshwar is being carried out from the village road Fund.

The canal is an old one and is dependent on the rains for its supply. There is no storage reservoir. To overcome these difficulties, a project for constructing a storage reservoir at Yemagalli is under the consideration of Government.

The lands commanded by this canal are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon were 423 acres and Rs. 2,389 respectively as compared with 472 acres and Rs. 2,701, respectively, the corresponding averages of the previous three years. The gross assessed revenue (after deducting Rs. 23,156 to be credited to old work) amounted to Rs. 1,301.

KANARA DIVISION.

Mavinkop Tank.

The management of this tank has been entrusted to the Revenue Department. The rainfall was 46·08 inches. The supply of water in the tank was adequate for irrigation. The area irrigated which is assessed at consolidated rates amounted to 668 acres and the irrigation share of land revenue was Rs. 2,018 as compared with 483 acres and Rs. 2,018 for the previous year. The gross assessed revenue was Rs. 2,018.

SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND BROACH DIVISIONS.

KHARI SLUICES.

The flow in the Khari river was not satisfactory owing to the inadequate rainfall. The area of transplantation of rice was 4,889 acres. As the flow in the Khari failed in the latter part of the season most of the area dried up and remissions of himayat had to be granted by the Revenue Department. Besides this, a non-himayat paying area of 32 acres was also irrigated under this system.

The Khari sluices including the Goblaj tank, the Bherai and the Naika reservoirs were maintained in good order at a cost of Rs. 5,760. The miscellaneous revenue under the Khari Sluices System amounted to Rs. 727 compared with Rs. 600 received in the previous year.

The following table compares the areas irrigated and the assessment levied during the year with the respective averages of the previous three years :—

	Average.		1939-40.	
	Area.	Revenue after deducting remissions.	Area.	Revenue after deducting remissions.
	Acres.	Rs.	Acres.	Rs.
I. Irrigation above Kalambandhi villages (of Mahij, Bidaj and Lali) ..	842	1,257	43	173
II. Irrigation from tanks that can be fed by the river Khari—				
Goblaj	311	1,657	228	503
Galki	261	769	43	125
III. Irrigation from Khari sluices proper (i.e., 11 Kalambandhi villages) ..	5,810	13,691	4,889	13,137
Total ..	7,224	17,374	5,203	13,938

The assessment in respect of irrigation dependent on the Khari sluices in the Kalambandhi villages is consolidated. The average rates per acre for land and water respectively were as under :—

—	Irrigation share.	Land share.	Total consolidated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	0 3 3	3 3 6	3 6 9
Alienated land	0 3 11	0 15 5	1 3 4

Muvalia Tank.

This is an important tank situated in the vicinity of Dohad town in the Broach and Panch Mahals Collectorate and has a catchment area of about 30 square miles. During the year under review, it received a good replenishment. There was great demand for water during the Kharif Season. There was good irrigation in both the seasons under this tank. The area irrigated was 2,081 acres and the net assessment amounted to Rs. 5,768. The miscellaneous revenue amounted to Rs. 438 compared with Rs. 223 received in the previous year. On this tank the following works were carried out at the cost mentioned against each :—

	Rs.
(1) Lowering the Left Bank Canal of Muvalia Tank ..	444
(2) Providing reinforced brick lining on the Right Bank Canal in mile No. 0/2 to 0/8 of Muwalia Tank ..	597

Old Tanks.

Improvements to 1 tank in the Ahmedabad Division and 1 tank in the Kaira and Panch Mahals Division and repairs to 9 tanks in the Ahmedabad Division, 33 tanks in the Kaira and Panch Mahals Division and 44 Tanks in the Surat and Broach Division were carried out at a total cost of Rs. 1,418 and Rs. 50,250 respectively. The areas irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.	Area irrigated.	Revenue.		Total consolidated assessment.
		Irrigation share.	Land share.	
	Acres.	Rs.	Rs.	Rs.
Ahmedabad	12,208	11,207	44,094	55,301
Kaira	532	282	150	432
Panch Mahals	270	689	1,436	2,125
Broach	795	1,481	5,015	6,496
Surat	2,883	4,667	23,479	28,146

Drainage Channels.

The drainage channels in the Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions, were maintained in good order at a cost of Rs. 7,719, Rs. 6,986 and Rs. 5,197 respectively.

DECCAN IRRIGATION CIRCLE.

NIRA CANALS DIVISION.

Rakh Tank.

This tank is situated about 5 miles from Walha railway station of the Madras and Southern Mahratta Railway and is formed by an earthen dam constructed across a nala near Rakh village in Purandhar Taluka of the Poona District. The catchment area of the tank is 5·38 square miles and its capacity is only 34·2 million cubic feet. The tank has two channels of a total length of $3\frac{5}{8}$ miles. The area under command on channel No. 1, which is on the left bank, is 265 acres and that on channel No. 2 is 321 acres. The main channel is designed to discharge 12·8 cusecs leaving sufficient margin for all losses in transit. An area of 268 acres was irrigated and the revenue assessed amounted to Rs. 1,156 as compared with 226 acres and Rs. 1,112 respectively during the previous year.

POONA IRRIGATION AND RESEARCH DIVISION.

Effluent Irrigation on the Mutha Right Bank Canal.

The total area of sugarcane irrigated on effluent during the year was 875 acres as compared with 665 acres during the previous year. The average discharge pumped during the year was 10·77 cusecs and the whole discharge was utilised for purposes of irrigation. The total area irrigated was 1,480 acres as compared with 1,224 acres during the previous year. The assessed revenue amounted to Rs. 72,428 as compared with Rs. 58,810 during the previous year. The rate for the supply of effluent for sugarcane was Rs. 75 per acre during the year under report. The increase in the assessed revenue was partly due to increase in rate and also increase in the area irrigated.

Bandharas (Poona District).

Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the lands to be irrigated. The following table gives the area irrigated and the consolidated assessed revenue on the bandharas in the Haveli

Taluka of the Poona Collectorate during the year as compared with the average of the past three years :—

	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1939-40	29	73	174	247
Average	29	73	174	247

Bandharas (Nasik District).

There are numerous bandharas situated in this District. There are in all 299 such bandharas on the list. The expenditure incurred on repairs to bandharas (70 in number) during the year amounted to Rs. 37,336. The following table gives the area irrigated and the consolidated assessed revenue during the year as compared with the averages of the past three years :—

	Area. irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1939-40	27,391	1,98,515	54,337	2,52,852
Average	27,037	1,79,692	52,637	2,32,329

AHMEDNAGAR DIVISION.

Visapur Tank.

The Visapur Tank dam which is situated about 2 miles from the Visapur railway station on Dhond-Manmad Railway line is built across the Hanga river, a tributary of the Bhima river. It was started as a famine relief work in 1896 and was subsequently completed in successive stages by criminal tribes and convict labour by June 1927. This earthen dam which is 7,440 feet long and 84 feet high, forms a lake having a net capacity of 1,136 million cubic feet. The estimated cost of the whole scheme was Rs. 41 lakhs of which a sum of Rs. 21 lakhs was spent on the dam

and head works and the balance on the construction of the canal, distributaries and minors, which aggregate 46 miles in length. The total area under command is 95,000 acres of which 26,000 acres are irrigable. The catchment area of the tank is 159 square miles in extent and it has a capacity of 1,172 million cubic feet. Irrigation from this tank was first started during the rabi season of 1929–30. Owing to an increased demand for water due to the starting of a small sugar factory on the Chimbla Distributary, the waste weir was raised by 2 feet in March 1934 to increase the storage in the tank by 130·20 million cubic feet. The yield from the catchment (159 square miles) was 314·39 million cubic feet during the year, the average rainfall being 12·52 inches.

On the 1st April, the level of water in the tank was 34·80 feet above the sill of the outlet, the contents being 860·32 million cubic feet. The lowest level of 31·15 feet was reached on the 28th June 1939, the corresponding contents then being 680·37 million cubic feet. Replenishment was received in the tank on the 29th June, the corresponding contents being 732·18 million cubic feet the depth of water being 32·25 feet. The highest level of 35 feet was reached on the 8th July 1939 with a storage equivalent to 872·09 million cubic feet. The tank did not overflow during the year under report. The area irrigated, the irrigation assessment and the gross assessed revenue were 3,190 acres, Rs. 23,895 and Rs. 26,624 as compared with 2,100 acres, Rs. 15,497 and Rs. 20,501 respectively, the averages of the past three years. The expenditure incurred on maintenance and repairs to the tank and canal amounted to Rs. 6,861.

Mandavgan Tank.

This tank is situated on a nala about 2½ miles away from Mandavgan village, taluka Shirgonda in the Ahmednagar District. The earthen dam is 1,605 feet in length. The tank has a hilly catchment of about 5·32 square miles. It is entirely dependent on local rains for its supply of water. This tank has been taken over from the District Local Board, Ahmednagar, from the rabi season of 1932–33, for irrigation management. Replenishment was received on the 3rd July the corresponding contents being 6·29 million cubic feet. The area irrigated, and the water rates assessed during the year were 92 acres and Rs. 401 respectively, as compared with 67 acres and Rs. 314 respectively, during the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 905.

CENTRAL CIRCLE.

The area irrigated and the gross assessed revenue on small tanks were 1,779 acres and Rs. 8,658 respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,682 acres and Rs. 64,668 respectively.

POONA DIVISION.

KHAMGAON TANK.

This tank which is situated in mile 23 of the Mutha Right Bank Canal is only partially completed, receives replenishment during the monsoon from the Mutha Right Bank Canal Distributary No. 17. The supply available was issued for the irrigation of 355 acres and the irrigation revenue assessed on account of water rates was Rs. 1,876 the corresponding figures for the previous year being 255 acres and Rs. 1,278 respectively.

SHOLAPUR DIVISION.

WADSHIVNE TANK.

On the 1st April, the level of the water in the tank was at R. L. 447·17 feet i.e., 11·17 feet above the sill of the outlet and hence the demand for hot weather and Kharif seasons was accepted.

During the year under report, the area irrigated and the gross assessed revenue were 639 acres and Rs. 2,564 as compared with 768 acres and Rs. 3,778 the corresponding averages of the previous three years.

The rainfall gauged at the Tank was 16·35 inches, as compared with 21·64 inches the average of the preceding three years. The total replenishment received during the year was 61·77 million cubic feet which was fully utilised for irrigation during the Rabi season.

KHANDESH DIVISION.

TALWADA TANK.

The supply in this tank is generally uncertain. On the 1st April, the contents in the tank were 17·73 million cubic feet which gradually diminished to 2·48 million cubic feet. The first replenishment was received on the 3rd July, when the contents were 6·48 million cubic feet. The maximum storage of 57·27 million cubic feet was reached on the 10th September. The storage went down to 8·47 million cubic feet on 31st March 1940.

The rainfall gauged at the tank was 11·14 inches as compared with 20·20 inches, the average of the preceding three years. The area irrigated was 461 acres and the gross assessed revenue amounted to Rs. 2,041. The revenue realised from water rates during the year was Rs. 1,969 the miscellaneous realisations being Rs. 72. The expenditure incurred on the maintenance and repairs to the tank and canal was Rs. 445.

OLD WORKS.

The old bandharas and channels are grouped as under :—

1. The Upper Panjhra river group including Gondur Tank.
2. The Kan river group.
3. The Burai river group.
4. The Girna river group.
5. The Bori river group.

The subjoined table shows the area irrigated and the revenue derived from these works as compared with the averages of the preceding three years :—

Area irrigated.		Revenue.					
		Irrigation share.		Land share.		Total.	
1939-40	Average.	1939-40	Average.	1939-40	Average.	1939-40	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,682	8,599	64,668	64,429	13,649	13,006	78,317	77,435

The expenditure on these bandharas was as under :—

	18—Other Revenue Expenditure.	18—A-Irrigation Civil.	Total.
	Rs.	Rs.	Rs.
Extensions and improvements.	1,002	545	1,547
Repairs	1,974	2,532	4,506

An expenditure of Rs. 250 and Rs. 30 was also incurred on river and rain gauge operations during the year, and on the Survey of Borban and Panthal Bandharas and channel at Pimpalner.

NASIK DIVISION.

KHIRDI SATHE TANK.

This is a small tank in Yeola Taluka of the Nasik District. The tank is formed by an earthen dam and is dependent on local rains for its supply which is generally sufficient for crops grown during the monsoon and rabi seasons.

On the 1st April, the level of water in the tank was at R. L. 222·10, the contents being 13 million cubic feet. Replenishment commenced on the 20th June and the water level rose to 13·00 feet above the sill on the 1st of November, the contents being 38·25 million cubic feet. The draw off for irrigation purposes commenced on the 5th December when the level of water was 11·95 feet and the contents 31·35 million cubic feet. On the 31st March, the level of water was 1·80 feet above the sill, the contents being 2·14 million cubic feet. The area irrigated during the year was 324 acres as compared with 167 acres, the average of the previous three years. The increase was due to more cultivation of sugar cane than in the previous year. The assessed revenue on account of water rates amounted to Rs. 2,177 as compared with Rs. 873 the average of the previous three years, the miscellaneous receipts being Rs. 219.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

There are approximately 525 second class irrigation tanks situated in the Belgaum Division. During the year under report repairs to 36 tanks were carried out at a cost of Rs. 19,738 and in addition to this sum, an expenditure of Rs. 2,590 was incurred on the survey of the old tanks. The area irrigated during the year was 13,039 acres, the irrigation share of land revenue being Rs. 1,18,542. The total direct and indirect receipts amounted to Rs. 1,18,625 as compared with Rs. 1,03,320 during the previous year. The remissions sanctioned during the year amounted to Rs. 8,683.

BIJAPUR DIVISION.

There are 14 tanks in this Division, out of which 4 have been declared as second class Irrigation tanks. During the year under report an expenditure of Rs. 4,457 was incurred on repairs to 7 tanks. The area irrigated during the year was 1,026 acres and the irrigation share of land revenue amounted to Rs. 2,981. No remissions were granted during the year. The total direct and indirect receipts during the year under report were Rs. 5,894 against Rs. 6,532 for the previous year.

The work of constructing an Irrigation tank at Nandargi, taluka Indi (Minor Irrigation Works) was first started as a scarcity work in the year 1938 to provide work to the scarcity stricken people in the area. An expenditure of about Rs. 44,600 was incurred during the year under report against the estimated amount of Rs. 98,537. On the cessation of scarcity conditions, the work has been let out on contract in January 1939. The work has nearly been completed.

DHARWAR DIVISION.

There are about 2,931 second class Irrigation tanks. During the year under report an expenditure of Rs. 73,032 was incurred on repairs to about 168 tanks and a sum of Rs. 3,700 was spent on extensions and improvements, etc. The area irrigated during the year was 74,883 acres and the irrigation share of land revenue amounted to Rs. 1,61,803. The remissions granted during the year amounted to Rs. 63,733. The total direct and indirect receipts were Rs. 1,63,695 as compared with Rs. 1,28,179 for the previous year.

KANARA DIVISION.

In this Division there are about 184 second class Irrigation tanks. During the year, an expenditure of Rs. 23,500 was incurred on repairs to 97 tanks. In addition, a sum of Rs. 3,266 was spent on " surveying irrigation tanks and preparing projects for their improvements ". The area irrigated during the year was 33,270 acres and the irrigation share of land revenue was Rs. 1,03,209 of which Rs. 1,02,123 were realised during the year.

RATNAGIRI DIVISION.

There are only four tanks in this Division. The area irrigated was 1,374 acres and the irrigation share of land revenue was Rs. 6,266, the whole of which was realised during the year.

SECTION III.

RESEARCH WORK.

POONA IRRIGATION AND RESEARCH DIVISION.

In the Deccan, when a large perennial canal is opened, widespread water-logging is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, the damage, consisting mainly of salt-efflorescence, becomes permanent. The seriousness of the menace was realised as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safeguard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913 it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safeguarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Poona Irrigation and Research Division) was formed and the work entrusted to it was the contouring of the commanded areas, the carrying out of a careful survey and classification of the surface and sub-soil, the selection and marking out of definite areas suitable for "blocks" for perennial and other crops, the designing of the drainage works required, the indication of suitable lines of communication and centres for the establishment of crushing, grinding, and refining and other machinery for trade purposes and the study of the question of the reclamation of waste lands and areas damaged by water-logging and salt-efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by means of actual experiment has been the sphere of work of this Division.

The investigations coming within this sphere may be broadly grouped under four heads, viz. :—

(1) Irrigation management,

(2) Irrigation requirements or the inter-action of agricultural requirements and irrigation limitations,

(3) Soil physics of irrigated tracts,

(4) Drainage and reclamation.

The work done by this Division may be classified as under :—

(1) Sub-soil survey and observation of sub-soil water levels,

(2) Irrigation and blocks,

(3) Sub-soil drainage construction,

(4) Drainage schemes for allotted sugar factory areas,

(5) Irricultural research.

A brief account of the work done during the year under each of these heads is given below :—

(1) Sub-soil Survey and Observations of Sub-soil Water Levels.

The observations of damage and well water levels on the Godavari, the Pravara and the Nira Canals were continued. It is observed that there is a decrease in damage to lands and Hydro-Iso-Baths figures in case of factory areas where the construction work of drainage projects is in progress. In case of other irrigation on the canals, the damaged area is practically constant but there is rise in the Hydro-Iso-Bath due to the increase in cane areas where drainage schemes are needed. Safe limits of sugarcane areas to be allowed on each distributary of the Godavari and Pravara Canals were investigated and fixed and the work on the area of Nira Right Bank Canal is in progress.

(2) Irrigation and Blocks.

Individual inspection of lands as regards the drainage and the suitability of the soil for fruit-gardens for which applications were received were carried out during the year. Applications for exemption from the rule disallowing perennial irrigation within one-fourth mile limit of towns and villages were investigated.

(3) Sub-soil Drainage Construction.

Detailed observations were made in the areas served by the drainage schemes already constructed. The improvement in the condition of the damaged areas continues. The construction work of the following drainage works was completed during the year :—

(1) Manjri Drainage Scheme (Mutha Right Bank Canal).

(2) Deolali Drainage Scheme (Pravara Right Bank Canal).

(4) Drainage Schemes for allotted Factory Areas.

Considerable progress was made in the projects for land drainage in the allotted sugar factory areas and plans and estimates for several projects of drainage schemes in respect of the various Sugar Factories on the Deccan Canals were prepared and the construction works of drainage Projects are in progress in various Sugar Factory areas during the year under report. A careful watch is being kept on the factory areas in many catchments in which full sugarcane concentration has been reached.

(5) Irricultural Research.

In the Hadapsar Effluent Experimental Area, field experiments were carried out with a view to finding out the best varieties of sugarcane

and the most suitable treatment and methods of cultivation of sugarcane manured by effluent. The question of the disposal of the increasing quantity of effluent by more concentrated and prolonged application and the effect on the soil of effluent manuring year after year was also under investigation.

In the Baramati Experimental Salt Area, field experiments on soil reclamation after drainage based on the data from laboratory and plot scale experiments were carried out. Method of cultivation, fertilizers, green manures and sugarcane varieties suited to the process of reclamation were tested with satisfactory results. This research has wide application on the damaged areas on the Deccan Canals.

STATEMENTS I-E AND I-F

STATEMENT

Statement of Area irrigated by Irrigation Works in the

No	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.							
	PRODUCTIVE.							
	Southern Circle.							
1	Gadikeri Tank	*423		*423	*423	..	..	..
2	Mavinkop Tank	*668	..	*668	*668	..	..	..
	Central Circle.							
3	Ekruk Tank	(1,814)	(2,367)	(4,181)	4,570	33	..	..
		2,004	2,599	4,603				
4	Shahada Channel	(357)	(584)	(941)				
		367	599	966	964	2	21	1·08
		(589)	(377)	(966)	*974			
		*597	*377	*974				
	Total, Productive ..	2,371	3,198	5,569	5,534	35	21	..
		*1,688	*377	*2,065	*2,065			
	UNPRODUCTIVE.							
	Northern Circle.							
5	Hathmati and Khari Cut Canal ..	1,072	69	1,141	1,032	109	..	..
		..	..	..	..	..	..	..
6	Wangroli Tank	644	58	702	646	56	..	..
7	Savli Tank	730	..	730	718	12	..	..
8	Saiat Tank	..	..	..	..	..	..	..
9	Tranza-Nagrama Tanks	3	11	14	14	..	..	..
10	Futelao Tank	93	173	266	266	..	..	..
	Deccan Irrigation Circle.							
11	Nira Left Bank Canal	(23 159)	(48,512)	68,505	68,266	239	370	0·1
		21,681	46,824					
	Shetphal Tank	(2,532)	(4 011)	6,150	6,150	..	44	0·7
		2,196	3,954					
12	Nira Right Bank Canal	(20,450)	(28 343)	45,728	45,709	19	11	..
		20,766	24,962					

I-E.

Province of Bombay, during the year 1939-40.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..		..	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..		
21·18	29·00	21·18	29·00	94	99	94	99	Do. ..	Do.
11·75	24·84	11·75	24·84	83	60	83	60	Do. ..	Do.
..	..	..	..	..	..	..	..		
149	6	16	6	4·35	11·16	35·5	11·16	15th June to 15th November.	16th November to 14th February.
16	..	16	..	52·62	..	52·62	..		
29·27	3·92	29·27	3·92	22	14·8	22	14·8	Do. ..	Do.
58·59	..	58·59	..	12·46	..	12·46	..	Do. ..	Do.
..	..	..	..	..	..	..	..	Do. ..	Do.
..	..	..	..	..	..	..	..	Do. ..	Do.
9·00	17·00	9·00	17·00	18·33	12·20	10·33	12·20	Do. ..	Do.
460	479	(*h*)409	(*h*)460	50	101	(*h*) 57	(*h*) 195	15th February to 14th October.	15th October to 14th February.
29	36	29	36	87	111	87	110	Do. ..	Do.
410	430	235	323	(*a*) 50	(*a*) 66	(*a*) 87	(*a*) 88	Do. ..	Do.

STATEMENT

No.	Name of work.	Area irrigated: Kharif.	Rabi.	Total.	Flow.	Lift.	Double cropped: Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*							
	UNPRODUCTIVE—*contd.*							
	Deccan Irrigation Circle—contd,							
13	Mutha Canals	(11,250) 11,432	(2,040) 2,200	13,632	13,489	143	..	..
	Matoba Tank (e)	(624) 652	(1,818) 1,927	2,579	2,579	..	..	..
	Lake Beale—Darna Dam	(266) 266	(149) 149	415	..	415	..	..
14	Godavari Right Bank Canal ..	(9,060) 14,103	(12,142) 6,470	20,573	20,465	108	643	3·1
	Godavari Left Bank Canal	(7,562) 11,977	(8,693) 4,774	16,751	14,762	1,989	619	3·7
15	Chankapur Tank—Girna Canal ..	(3,910) 4,842	(5,262) 5,438	10,280	10,274	6	..	..
16	Kadwa River Works—Palkhed Canal ..	(1,120) 1,219	(1,433) 963	2,182	2,146	36	..	..
	Kadwa River Works—Ojhar Tambat Canal	(550) 616	(835) 608	1,224	1,224	..	..	..
	Kadwa River Works—Wadali Canal ..	(404) 459	(542) 265	724	724	..	..	..
17	Pravara Right Bank Canal	(6,555) 8,926	(8,164) 3,306	12,232	12,232	..	589	4
	Pravara Left Bank Canal	(22,312) 28,719	(27,266) 16,752	45,471	45,256	215	414	·93
18	Bhatodi Tank (e)	(275) 290	(329) 409	699	699	..	..	..

I-E—*contd.*

Average discherges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kherif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
179	128	(c)	(h) 94	(d) 63	(d) 16	(c)	22	15th February to 14th October.	15th October to 14th February.
13	14	13	14	49	130	49	130	Do. ..	Do.
..	..	..	..	..	..	..		Do. ..	Do.
189	245	189	245	48	50	48	50	Do. ..	Do.
115	137	115	139	66	63	66	63	Do. ..	Do.
80	99	80	99	49	53	49	53	Do. ..	Do.
13	20	13	20	86	72	86	72	Do. ..	Do.
5	9	5	9	110	93	110	93	Do. ..	Do.
5	7	5	7	81	77	81	77	Do. ..	Do.
98·12	105·61	89·71	102·28	(b) 67	(b) 77	(b) 73	(b) 80	Do. ..	Do.
402·74	360·23	383·37	347·02	(b) 55	(b) 76	(b) 58	(b) 79	Do. ..	Do.
2·80	3	2·80	3	(f) 98	(f) 110	(f) 98	(f) 110	Do. ..	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT —*contd.*							
	UNPRODUCTIVE—*contd.*							
	Central Circle.							
19	Kasurdi Tank (*c*)	(18)	(3)	(21)	23	..	..	..
		20	3	23				
20	Shirsuphal Tank (*c*)	(508)	(789)	(1,297)	1,336	..	..	..
		500	826	1,336				
21	Bhadalwadi Tank (*c*)	(142)	(959)	(1,101)	1,162	..	..	..
		145	1,017	1,162				
22	Mhaswad Tank	(606)	(1,151)	(1,757)	1,960	19	..	..
		706	1,273	1,979	..	..		
23	Parsul Tank (*c*)	(291)	(595)	(886)	923	..	..	..
		312	611	923				
24	Koregaon Tank	(26)	(455)	(481)	567	16	..	..
		32	551	583				
25	Ashti Tank	(15)	(2,752)	(2,767)	3,064	5	..	..
		21	3,048	3,069				
26	Pathri Tank	(12)	(584)	(596)	650	..	..	..
		14	636	650				
27	Jamda Canals	(329)	(1,331)	(1,660)	1,777	..	..	..
		351	1,426	1,777				
28	Hartala Tank	..	(29)	(29)	42	..	..	..
			42	42				
29	Mhaswa Tank	(12)	(504)	(516)	547	3	..	..
		12	538	550				
		(245)	(913)	(1,158)	1,209		14+	
		253	956	1,209			191 =	
30	Lower Panjhra River Works	(1,155)	(122)	(1,277)	*1,277	..	205	8·42
		*1,155	*122	*1,277				
31	Krishna Canal	(2,753)	(1,519)	(4,272)	4,401	727	41	0·96
		3,293	1,835	5,128				
32	Rewari Canal	(139)	(342)	(481)	601	..	29	6·03
		189	412	601				
33	Upper Man River Works	(167)	(763)	(930)	1,081	7	195	20·96
		200	888	1,088				
34	Yerla River Irrigation Works	(422)	(2,995)	(3,417)	3,971	58	258	7·55
		515	3,514	4,029				
35	Chikhli Canal	(223)	(51)	(274)	327	5	..	..
		268	64	332				
36	Maini Tank	(226)	(924)	[(1,150	1,387	16	...	..
		329	[1,074	1,403				

I-E—*contd.*

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.			
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..	15th February to 14th October.	15th October to 14th February.
6·9	8·1	6·9	8·1	73	132	73	132	Do. ..	Do.
3·24	4·21	3·24	4·21	44	241	44	241	Do. ..	Do.
55·0	116·0	55·0	116·0	11	10	11	10	Do. ..	Do.
0·76	2·71	0·76	2·71	410	225	410	225	Do. ..	Do.
0·35	1·72	0·35	1·72	74	264	74	264	Do. ..	Do.
0·71	13·48	0·71	13·48	21	204	21	204	Do. ..	Do.
0·40	4·73	0·40	4·73	30	123	30	123	Do. ..	Do.
12·90	57·45	12·90	57·45	26	27	26	27	Do. ..	Do.
..	0·0868	..	0·0868	..	334	..	334	Do. ..	Do.
0·015	4·72	0·015	4·72	800	106	800	106	Do. ..	Do.
0·92	0·93	0·92	0·93	1,529	1,481	1,529	1,481	Do. ..	Do.
43·95	58·86	43·95	58·86	84	80	84	80	Do. ..	Do.
1·61	2·13	1·61	2·13	91	204	91	204	Do. ..	Do.
0·72	4·77	0·72	4·77	251	169	251	169	Do. ..	Do.
4·60	24·11	4·60	24·11	107	134	107	134	Do. ..	Do.
0·70	0·47	0·70	0·47	353	109	353	109	Do. ..	Do.
1·00	6·40	1·00	6·40	241	158	241	158	Do. ..	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT —*concld.*							
	UNPRODUCTIVE—*concld.*							
	Southern Circle.							
37	Gokak Canal—First Section	6,088	3,816	9,904	9,701	203	1,171	11·82
38	Muchkundi Tank	8	..	8	8	..	..	..
39	Dambal Tank	66 *144	135 ..	201 *144	201 *144	..	..	..
40	Medleri Tank	17	15	32	29	3	..	..
41	Madag Tank	253	121	374	374	..	..	..
42	Asundi Tank	*8	172 *182	172 *190	167 *190	5	..	..
43	Dharma Canal	423 *8,648	.. ..	423 *8,648	423 *8,648	..	..	..
	Total, Unproductive	1,44,701 *9,955	1,42,295 *304	2,86,596 *10,259	2,82,568 *10,259	4,428	4,589	..
	Grand Total, Productive and Unproductive.	1,47,072 *11,643	1,45,493 *681	2,92,565 *12,324	2,88,102 *12,324	4,463	4,610	..

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have crops are irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(*a*) Low duties on the Nira Right Bank Canal are due to scattered nature of irrigation.

(*b*) The duties on the Pravara Canals are low due to high proportion of sugarcane and other perennial crops.

(*c*) Figures of " utilized " discharge are not available, as the quantity let into the Matoba Tank could not be acurately

(*d*) The low duties are due to high proportion of perennial irrigation.

(*e*) There is generally no supply in the Matoba, and Bhatodi Tanks in the hot weather season. Even during the of days on which the channels were in flow has therefore been taken for purpose of calculating average discharge and

(*f*) The high duties on the Bhatodi Tank are due to concentrated irrigation on small channel, and because major

(*h*) The difference between the discharge at head and utilized in respect of the Nira Left Bank Canal was due to and the Mutha Canals it was due to water having run to waste through escapes, etc.

*Area under consolidated assessment.

†43 (49—6=43) cusecs were supplied to the Khari Cut Canal through Bhujwa Channel to Bokh Reservoir.

I-E—*concld.*

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kherif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
57·00	50·25	57·00	50·25	100·72	104·92	100·72	104·92	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..	Do. ..	Do.
·49	2·87	·49	2·87	428·57	47·04	428·57	47·04	16th January to 15th October.	16th October to 15th January.
·87	1·03	·87	1·03	19·77	14·56	19·77	14·56	Do. ..	Do.
1·40	2·30	1·40	2·30	182·01	56·96	182·01	56·96	Do. ..	Do.
0·07	4·14	0·07	4·14	114·28	85·51	114·28	85·51	Do. ..	Do.
39·55	20·71	39·55	20·71	231·88	..	231·88	..	Do. ..	Do.
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		

been calculated on these figures. In the rabi season in addition to pure rabi crops, perennial and eight months

measured.

monsoon and rabi seasons the channels are closed for days together due to rainfall and other causes. The actual number
duties.

portion of irrigation is seasonal.

water having been let into the Shetphal Tank and run to waste through scouring sluices. In regard to the Pravara Canals

STATEMENT I-F.

Statement showing water-rates per acre in force during 1939-40 on Irrigation Works in the Province of Bombay

No.	Name of Work.	Water-rates.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	PRODUCTIVE.											
	Southern Circle.											
1	Gadikeri Tank* ..	..	..	..	..	..	..	..	..			
2	Mavinkop Tank* ..	..	..	..	..	..	..	..	..			
	Central Circle.											
3	Ekruk Tank a ..	..	A 35 B 17½	8	3	5	7	..	2	*Nil.*	*Nil.*	*Nil.*
4	Shahada Channel a ..	..	A 28 B 14	8	3	5	6	..	2			
	UNPRODUCTIVE.											
	Northern Circle.											
5	Hathmati Canal a[1] ..	..	(*b*[3])	..	D 3 E 1	3	6	..	2	*Nil.*	*Nil.*	*Nil.*
	Khari Cut Canal a[1] ..	..	(*b*[3])	..	D 5 E 1	5	6	..	1 **2			
6	Wangroli Tank a[2] ..	..	(*b*[3])	6½	D 5 E 2½	4	6	..	1½			
7	Savli Tank a[2] ..	..	(*b*[3])	8	D 5 E 4	4	6	..	1½			
8	Saiat Tank a[2] ..	..	(*b*[3])	6½	D 4 E 2½	4	6	..	1½			
9	Tranza Nagrama Tanks, a[2]	..	(*b*[3])	6	D 4 E 2	4	6	..	1			
10	Futelao Tank a[2] ..	..	(*b*[3])	4	D 4 E 2	a[4]3 a[5]2	5	..	a[6]1			
	Deccan Irrigation Circle.											
11	Nira Left Bank Canal Shetphal Tank (*d*) ..	§19 ¶16	M 45 C 66 B 22½ K 15	8	3	5	7		(*e*) 2			
12	Nira Right Bank Canal (*d*).	§19 ¶16	M 45 C 66 B 22½ K 15	8	3	5	7		(*e*) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	Water rates.										
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept— *contd.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle —contd.											
13	Mutha Canals and Matoba Tank (*d*) (*e*)—											
	Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits.	..	50									
	On all remaining land commanded by both the canals.	..	M 45	8	3	5	7	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
	Pan gardens ..	..	C 66									
	Perennial crops other than sugarcane and pan gardens.	..	B 22½									
	Pomegranates ..	..	15									
	Matoba Tank ..	..	(*f*)									
14	Godavari Right Bank Canal (*d*) / Godavari Left Bank Canal (*d*).	§19 ¶16	M 45 C 66 B 22½ K 15	8	3	5	7	..	(*e*) 2			
15	Chankapur Tank— Girna Canal (*d*) ..	..	X	8	3	5	6	..	(*e*) 2			
16	Kadwa River Works (*d*)—											
	Waghad Tank ..	..										
	Palkhed Canal ..	..										
	Ojhar-Tambat Canal.	..	X	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
	Wadali Canal ..	..										

STATEMENT I-F—*contd.*

No.	Name of Work.	Water-rates: Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept— *contd.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle —concld.											
17	Pravara Canals (*d*) ..	§19 ¶16	M 45 C 66 B 22½ K 15	8	3	5	7	..	(*e*) 2			
18	Bhatodi Tank (*d*) ..	..	X	8	3	5	6	..	(*e*) 2			
	Central Circle.											
19	Kasurdi Tank (*d*) ..	..										
20	Shirsuphal Tank (*d*)	..	X	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
21	Bhadalvadi Tank (*d*)	..										
22	Parsul Tank a ..	..										
23	Koregaon Tank a ..	..										
24	Ashti Tank a ..	..	A 28	8	3	5	6	..	(*e*) 2			
25	Pathri Tank a ..	..	B 14									
26	Mhaswad Tank a ..	..										
27	Jamda Canals a ..	..										
28	Hartala Tank a ...	..	A 12	5	2	3	4	..	(*e*) 1			
29	Mhasva Tank a ..		B 9									
30	Lower Panjhra River Works a	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
31	Krishna Canal a ..	..	A 32 B 16	8	3	5	8	..	(*e*) 2			
32	Revari Canal a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
33	Upper Man River Works a	..	A 28 B 14	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
34	Yerla River Irrigation Works a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
35	Chikhli Canal a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
36	Maini Tank a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			

STATEMENT I-F—*concld.*

No.	Name of Work.	Water rates.										
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept— *concld.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*concld.*											
	Southern Circle.											
37	Gokak Canal, 1st Section and Storage Works (*u*).	..	(b^1) 27½ (b^2) 20 (a^7)	8	3 (a^8)	5	15	..	2	*Nil.*	*Nil.*	*Nil.*
38	Muchkundi Tank (*s*)..	..	(b^1) 10 (b^2) 5		2	2	5	..	1			
39	Dambal Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
40	Medleri Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
41	Madag Tank (*w*) ..	..	(*x*) 12	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
42	Asundi Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
43	Dharma Canal (a^9) ..	..	..	..	(*o*) 4½	..	..	..	(*j*) 1 (*k*) 2			

NOTE.—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkis should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irigation is in excess of the demand at half the flow rates for all crops other than sugarcane for which full rate should be charged.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking water without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case.

(6) In the D. I. C. monsoon or two seasonal crops which take pre-seasonal waterings between the 25th April and the break of the monsoon are charged the following water rates per acre according to the date of first watering applied for and sanctioned, *vide* G. R. No. 5602/27, dated 9th December 1931 :—

Water taken from the date	Rate for light type of crops.	Rate for medium type of crops.
	Rs.	Rs.
25th April	5	7½
5th May	4	6
15th May	3	4½

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivation in the basin of Lake Beale—*vide* G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned for the supply of water from the irrigation channel of Sangvi village near Bhatgar—*vide* G. R. No. 1849/27, dated 5th January 1932.

(9) The supply of water to the road side trees, etc., is charged as follows :—
Rs. 10 per 100 Nos. for trees, planted along field boundaries, roadsides, etc.
Re. 1 per 100 Nos. of seedlings, shrubs, etc.

(10) Short terms, cane and other perennials are charged in accordance with the scales laid down in G. R. Nos. 8670, dated 13th January 1927 and 3098/27, dated 6th November 1929 and 5602/27, dated 4th December 1935.

*Lands wholly assessed at consolidated rates.
§Block rate for blocks in 1 : 3 proportion of sugarcane.
¶Block rate for blocks in 1 : 4 proportion of sugarcane.
**For single watering for crops for which no application for irrigation throughout the season was received.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year. If water is given for part of the year the charge will be on the basis of thrice the medium seasonal rates for the seasons concerned—*vide* G. R. No. 5602/27, dated 9th December 1931.

D—For rice.

E—For crops other than rice.

K—For pomegranates.

M—For sugarcane.

X—For sugarcane and pan gardens double the seasonal rates and for other perennial crops single seasonal rates shall be charged.

(*c*) On the Matoba tank the rates for sugarcane is the rate in force on irrigation works for short term cane.

(*d*) Rates sanctioned in G. R. No. 2488/36, dated 23rd March 1939 and G. M. No. 929/36-1, dated 3rd August 1939.

(*e*) The single-watering rate applies to one pre-seasonal or post-seasonal watering to a sanctioned crop. If more than one such watering is taken, the full seasonal rate will be charged unless specifically ordered otherwise. The single watering rate is not applicable to seasonal irrigation.

(*f*) For sugarcane the short-term cane rates as per scale sanctioned in G. R. No. 8670, dated 13th January 1927 (which may be in force on major irrigation works), for pan gardens the same rate as on the Mutha Canals and for other perennials single medium seasonal rates will be charged—*vide* G. R. No. 5602/27, dated 9th December 1931.

(*j*) From 15th June to 14th October.

(*k*) From 15th October to 14th June.

(*l*) From 15th February to 14th June.

(*m*) From 15th June to 14th October or 15th July to 30th November.

(*n*) From 15th October to 14th February.

(*o*) For four months from 15th June to 15th October or 15th July to 15th November.

(*s*) In force up to 15th February 1942—*vide* G. R. No. 5459/27, dated 29th January 1936.

(*u*) In force up to 14th February 1943—*vide* G. R. No. 1604/36, dated 3rd January 1940 and G. M. No. 1604/36-1, dated 19th April 1940.

(*w*) Rates sanctioned in G. R. No. 3994/36, dated 18th November 1939 to be in force up to 14th February 1945.

(*x*) For sugarcane, betel leaves, etc., for 12 months.

(*y*) For eight months from 15th June to 14th February.

(*z*) For eight months from 15th October to 14th June or 1st August to 31st March.

a Rates to be in force up to 14th February 1941—*vide* G. R. No. 929/36, dated 20th January 1940.

a^1 Rates sanctioned in G. R. No. 5956/27, dated 26th May 1936 to be in force up to 14th February 1942.

a^2 Rates continued up to 14th February 1943—*vide* G. R. No. 3494/36, dated 15th February 1940 and G. M. No. 3494/36-1, dated 23rd April 1940.

a^3 Rates to be in force up to 31st July 1943—*vide* G. R. No. 2704/36, dated 23rd November 1938.

a^4 For ordinary rabi.

a^5 For restorative crops grown after rice.

a^6 In either kharif or rabi season.

a^7 In the case of pomegranates (perennial eight months), if water is supplied during the period from 15th June to 31st December it should be charged for at the rate of Rs. 8 per acre.

a^8 When "San" is grown along with Maize the water rate for this mixed crop for the monsoon season should be Rs. 2 per acre. When "San" is grown for manurial purposes only the water rate therefor should be Re. 1 per acre. Tur, when shown as a mixed crop with any kharif crop in the monsoon season, shall be charged the monsoon season rate *plus* the single watering rate for post seasonal waterings that may be required in the cold weather season. These concessional rates to continue until further orders, *vide*, G. R. No. 1604/36, dated 3rd January 1940.

a^9 Rates sanctioned in G. R. No. 293/27 of 29th January 1936, are to be in force up to 31st March 1942.

(b^1) Rate for perennial 12 months.

(b^2) Rate for perennial 8 months from 15th June to 14th February.

(b^3) Single seasonal rates are charged—*vide* G. R. No. 3343/27, dated 8th October 1929.

Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches of the P. W. D. from the year 1921-22 to 1939-40 and the percentage on the total outlay on works and repairs during that period in both the Branches.

Statement showing expenditure on establishment in the Roads and Buildings and on the total outlay on works and repairs

Year.	Expenditure on Establishment in the							
	50—Civil Works—Provincial.	81—Civil Works.	50—Civil Works—Central.	81—Military Works.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	68—Construction of Irrigation, Navigation, Embankment and Drainage Works.
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	..	1,98,683	45,258	2,84,992	34,35,888	19·26	11,53,734
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20·79	14,20,751
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19·88	21,87,793
1924-25 ..	16,89,892	12,25,632	1,19,721	27,862	2,52,556	33,15,663	19·67	29,10,785
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20·66	32,21,647
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23·76	35,56,959
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24·96	36,98,956
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25·03	39,04,670
1929-30 ..	22,45,450	7,33,867	1,56,773	3,638	2,34,897	33,74,625	25·26	42,26,873
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	85,444	29,91,872	32·35	42,88,966
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38·70	40,37,972
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,217	39·79	28,70,427
1933-34 ..	22,73,945	31,807	71,866	3,810	30,502	24,11,930	37·97	17,60,090
1934-35 ..	21,88,729	38,278	62,472	2,693	47,694	23,39,866	35·82	15,36,830
1935-36 ..	20,51,807	808	89,984	1,539	54,593	21,98,731	35·75	1,37,301
1936-37 ..	23,14,593	619	61,859	1,124	57,679	24,35,874	31·66	74,021
1937-38 ..	22,61,828	699	58,352	998	47,319	23,47,689	24·46	68,679
1938-39 ..	20,85,355	....	10,113	769	65,701	21,61,938	25·28	53,922
1939-40 ..	19,38,566	....	17,245 −11,702*	810 547*	63,725	20,09,191	23·37	37,362

*Represents the difference between the Establishment charges debited on the basis of estimated figures and those on

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Branch establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed entirely and that these charges also include cost of part of the time of Irrigation establishment spent on revenue management to execution of works and repairs. If these establishment charges debited in the accounts to "revenue management" repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrease in works is reduced. A mere overall percentage on expenditure on works is inaccurate.

The figures from the year 1921-22 to 1934-35 pertain both to the Province of Bombay and Sind.

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Government of Maharashtra
on 22 July, 2017

the Irrigation Branches of the P. W. D. from the year 1921-22 *to* 1939-40 *and the percentage during that period in both the Branches.*

Roads and Buildings Branch.								
XVII—Works for which capital accounts are kept.	18—Other Revenue Expenditure financed from Ordinary Revenue.	XLI—Receipts from Electricity schemes—Hydro-Electric Scheme.	53—Capital Outlay on Electricity schemes—Hydro-Electric Schemes.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Irrigation Branch.	Total Establishment charges in the Roads and Buildings and Irrigation Branches.	Percentage on the total outlay of works and repairs in Roads and Buildings and Irrigation Branches.
10	11	12	13	14	15	16	17	18
Rs.	Rs.			Rs.	Rs.		Rs.	
13,85,960	6,68,651	....	....	2,770	32,11,115	33·59	66,47,003	24·26
13,44,901	5,34,327	....	....	1,993	33,01,972	32·22	64,77,849	25·38
14,43,222	4,32,013	....	....	2,056	40,65,084	33·89	72,55,023	25·87
17,37,724	5,26,361	....	....	492	51,75,362	28·73	84,91,025	24·35
17,99,343	5,19,228	....	....	2,681	55,42,899	21·62	90,66,854	21·23
18,08,385	5,94,989	....	....	3,207	59,63,540	30·56	96,60,479	27·54
19,20,773	7,80,312	....	....	3,847	64,03,888	26·00	96,13,887	25·64
21,35,939	6,16,601	....	..	2,750	66,59,960	25·51	1,00,45,026	25·35
21,08,302	6,18,312	....	....	1,012	69,54,499	23·26	1,03,29,124	23·88
18,31,149	5,99,621	....	....	1,734	67,21,470	21·60	97,13,342	24·06
16,34,011	5,18,627	....	....	86	61,90,696	22·40	91,86,842	25·97
23,53,971	4,01,329	....	....	680	56,26,407	28·54	81,78,624	31·30
29,83,531	5,14,407	....	....	48,960	53,06,988	40·41	77,18,918	39·61
30,98,255	4,55,037	....	....	441	50,90,563	42·89	74,30,429	40·38
8,66,476	1,73,501	....	....	61	11,77,339	89·46	33,76,070	45·21
8,24,868	1,63,507	....	....	620	10,63,016	83·73	34,98,890	39·04
7,70,784	1,27,039	....	....	73	9,66,575	82·27	33,14,264	30·77
8,22,086	1,39,881	....	....	..	10,15,889	92·85	31,77,827	32·95
7,77,209	1,14,778	1,442	89,598	317	10,20,686	82·62	30,29,877	30·82

the basis of actuals to end of March final kept under suspense.

(column 16) is generally higher than that in the Roads and Buildings Branch (column 8). The reason is largely that the on "revenue management" work on certain canal systems which has no connection with the execution of works and repairs, including the *control and distribution of water*, which is debited in the accounts to "revenue management" and not are deducted from the total cost of establishment in the Irrigation Branch the percentage on the cost of works and outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which expenditure on

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